1/14/19 version 24

Catalyst for a Great Transition? Increased Investments in Early Childhood Education in New Mexico. [1]

Kira M. Villa

Melissa Binder

Robert P. Berrens

White Paper, Department of Economics,
University of New Mexico, Albuquerque, NM 87131

[1] Comments welcome. The opinions expressed are solely those of the authors, who are also responsible for all errors. Authors are listed in reverse alphabetical order. Kira Villa (kmvilla@unm.edu) is an Assistant Professor, Department of Economics, University of New Mexico; Melissa Binder (mbinder@unm.edu) is an Associate Professor in the Department of Economics, and Director of the Master of Public Policy Program, University of New Mexico; and Robert Berrens (rberrens@unm.edu) is Professor and Chair, Department of Economics, University of New Mexico. We appreciate helpful review comments from Janie Chermak.

Executive Summary

Substantial growth in the production of oil and gas in New Mexico, spurred by cost-reducing technological change (e.g., combined improvements in three-dimensional seismic imaging and testing, horizontal drilling and hydraulic fracturing), presents a set of important opportunities and challenges to state government.

For a state with persistent and relatively high levels of poverty, including and especially for children, the *Great Transition Challenge* facing the state of New Mexico is how to best invest a significant slice of the public revenues generated by the boom in oil and gas production. From a sustainable development perspective, it is a value judgment as to the kind of structure we want to impose on the bequest package we hand over to the generation that comes after us, in our chain-of-obligation to the future.

As part of such value debates and discussions, over the last decade there has been extensive, high-quality public discourse, analyses and reporting on protecting (and growing) state endowment funds versus diverting an increased distribution towards investment in early childhood education (ECE). Both options represent investments in the future of the state, each with their own risk/return considerations.

The state of New Mexico directs a significant portion of collected leases, taxes and royalties from the extraction of oil and gas into two endowment funds -- the Severance Tax Permanent Fund (STPF) and the Land Grant Permanent Fund (LGPF) -- with recent combined market values totaling over $23 billion. These inflows are combined with investment earnings, to allow an annual distribution from the funds to support a range of public beneficiaries. In contrast to using the more growth-challenged STPF (used for debt service on capital bonds), various proposals have targeted the Land Grant Permanent Fund (LGPF) to finance increased investments in ECE.

The case for investing in ECE as a particular form of human capital investment is supported by a compelling body of economic research demonstrating a wide variety of positive outcomes that persist over multiple decades, with significant public finance implications. Investments in ECE improve later educational outcomes (leveraging other public investments), and employment outcomes (improving future tax revenue generation), as well as improving health outcomes and reducing crime (reducing future tax needs). To its credit, the state has been significantly increasing public expenditures on ECE, and building capacity, but the level of unmet need remains large. From our review, a conservative, lower bound estimate of unmet needs for ECE in NM is about $104 million annually, which includes only targeted home visits and fully offers pre-K to both 3- and 4-year olds; if this were further expanded to also include *full day* pre-K for 3 and 4 year olds, then the estimate is $151 million annually of unmet need.

For the most recent decade (as of June 30, 2018), the 10-year average annual net-of fees investment earnings for the LGPF was 6.08% (but this can vary higher or lower depending on the chosen time frame). In comparison, research has documented annual return-on-investment (ROI) rates at 7%-10% and above for investments in high quality ECE. If the broader goal is enhancing sustainable development for the state, and not maximizing the size of the fund, then there is a strong economic case to be made for supporting increased ECE investments in NM.

Most basically, we support increased public expenditures for further expansion of ECE services in New Mexico. Home Visiting and pre-K are the elements of ECE with the best evidence base, and our current pre-K program meets 9 out of 10 NIEER quality criteria. Expansion of these services might be done out of current appropriations, or some mix with a smaller increment in distributions from the LGPF (e.g., 0.5% or less). But, with potentially limited support for tax increases, there may be limited possibilities to finance increased ECE out of current appropriations.

Thus, after careful review, we support legislative proposals for an increment of no more than 1% in the distribution rate of the LGPF to support increased investments in ECE. This might be restricted to the Commons Schools component of the LGPF. With such a restriction, then at 1% the estimated increase in the distribution would be expected to initially provide approximately $132.5 million annually, (or $163.63 million annually with no restriction). This would cover a conservative, lower bound estimate of unmet ECE needs, including pre-K for 3- and 4-year olds, with some margin for quality improvements in existing programs. If pursued, then to optimize these investments we encourage phased-in implementation, with efficient state oversight and administration, a minimum floor on protecting the corpus of the fund, and a significant focus on assessment and outcomes evaluation.

I. Introduction

Substantial growth in the production of oil and gas in New Mexico, especially through cost-saving, unconventional resources technology (e.g., combined improvements in three-dimensional seismic imaging and testing, horizontal drilling and hydraulic fracturing [see U.S. EIA, 2019]), presents a set of important opportunities and challenges to state government (Morris, 2016; Raimi and Newell, 2016). As played out over the next several decades or more, how we mitigate environmental damages and minimize the negative social costs on the most vulnerable communities, and concomitantly how we target investment of the collected scarcity rents (lease revenues, taxes and royalties), will tell the story of whether or not the state can translate this unique opportunity into sustainable economic development. We refer to this as the *Great Transition Challenge*. This collective economic challenge is not to ban or eliminate nonrenewable resource extraction. Rather, our challenge includes: (i) managing this extraction boom in ways that respect the importance of the private sector, and helps provide them with a measure of regulatory certainty; (ii) minimizing and mitigating the negative environmental and community impacts connected to nonrenewable resource extraction; and (iii) avoiding any resources curse (James and Aadland, 2011), where our state might fall further behind the economies of other states, by investing the public revenues generated in ways that balance stewardship with social returns (e.g., in targeted ways in people and places that collectively lifts us). Our focus here is on the latter (iii), and the issue of investing public revenues collected from oil and gas production to fund unmet needs in Early Childhood Education (ECE) (see Garcia, 2015).

Presented with growing aggregate scarcity rents collected from oil and gas extraction in New Mexico, a healthy public discourse debates what the connected package of public investments should look like. Economists can help shape this debate by pushing discussion towards consideration of investment proposals that are likely to pass social benefit-cost tests (and avoid those that don't), have a high return on investment (ROI), and have desirable equity properties. In a state persistently characterized by relatively high levels of poverty,[2] New Mexico commonly ranks at the wrong end of a wide variety of childhood welfare measures.[3] Led by the work of

[2] Among US states in 2017, New Mexico ranked 49th in the percentage of people who had incomes below the poverty line ($24,860 in 2017); 50th in unemployment (percentage of all workers who were unemployed in 2017); 50th in high school graduation (percentage of public high school students who graduated on time in the 2015–16 school year); and 48th in higher education attainment (percentage of young adults aged 25 to 34 who have an associate's degree or higher from 2017) (see: Talk Poverty, 2018). From the American Community Survey 5-year estimates (2013-2017), the overall poverty rate in NM was 20.6% (versus 14.6% in the US). From the American Community Survey 5-year estimates (2008-2012), the overall poverty rate in NM was 19.5% (versus 14.9% in the US) (U.S. Census Bureau 2008-2012). Unfortunately, these and similar economic statistics have persisted in New Mexico for many decades. For discussion of the need for significant economic change see Harris et al. (2016).

[3] From a broad composite index of childhood well-being (various measures of: health; education; family & community; and economic well-being), the Ann E Casey Foundation (2018) ranked New Mexico 50th (last) in 2018 among U.S. states. From the American Community Survey 5-year estimates (2013-2017), the percentage of all families in New Mexico below the poverty level with children under 5 years old was 25% (vs. 16.2% in U.S.); this rose to 52.2% (vs. 43.7% in U.S.) for female-headed households with no

Nobel Laureate James Heckman, a large body of economic research consistently supports large net social benefits from investments in ECE (e.g., Heckman, 2012; Heckman et al, 2006 and 2010; Reynolds et al., 2002; Rolnick and Grunewald, 2008; and Bartik, 2011).[4] ECE is not a silver bullet, it will not create economic change overnight, and it will not solve the Great Transition Challenge by itself; but it might be an important catalyst. Through a sustainable development lens, the objective of this White Paper is to review the case for significantly increased investments in ECE in New Mexico, including reviewing trends in public expenditures on ECE and unmet needs, as well as the issue of supporting ECE through higher annual draws from state endowment funds (currently ranked as the third largest set of sovereign wealth funds among US states [NM SIC, 2018]).

The paper proceeds as follows. Section II provides background discussion on sustainable development, from a capital/investment perspective, including energy resources in New Mexico. Section III reviews the operation of the two primary state endowment funds - the Severance Tax Permanent Fund (STPF) and the Land Grant Permanent Fund (LGPF), which are primarily funded from scarcity rents (leases, taxes and royalties) from oil and gas extraction. This section closes with review of recent proposals to increase distributions from the LGPF to fund increased investments in ECE in NM. Section IV summarizes the economic literature for the high ROI's from Early Childhood Education. Section V describes current trends in public expenditures on Early Childhood Education in New Mexico, which have been growing, and provides a conservative lower bound estimate of unmet needs. Finally, Section VI concludes.

II. Background on Sustainable Development

Broadly considered, the state of New Mexico can be thought of as collectively holding a bundle or portfolio of capital assets, which produces a net benefit stream. This total capital (TK) portfolio is comprised of: physical (or human-made) capital (PK); financial capital (FK); natural capital (NK) - further broken down into non-renewable natural capital (NRNK) assets [e.g., oil and gas deposits], and renewable natural capital (RNK) assets [e.g., healthy headwaters and watersheds that help provide clean water]); human capital (HK) [i.e., the cognitive and noncognitive skills, knowledge and training of our people – from small children to adults]; and social capital (SK) – the network of relationships and governance systems that allow us function as a collective people. While there may be significant substitutability between different parts of this capital portfolio, there can also be important complementarities between different components. But, taken together it is this composite portfolio which generates a net benefits stream, reflected in the quality of life and standard of living for the citizens of New Mexico.

husband present. The percentage of all children under 5-years old who were below the poverty level was 32.6% (US Census Bureau 2013-2017).

[4] As a policy instrument to spread economic opportunity widely, Bernanke (2007) argues: "Although education and the acquisition of skills is a lifelong process, starting early in life is crucial. Recent research…has documented the high returns that early childhood programs can pay in terms of subsequent educational attainment and in lower rates of social problems, such as teenage pregnancy and welfare dependency. The most successful early childhood programs appear to be those that cultivate both cognitive and noncognitive skills and that engage families in stimulating learning at home."

Further, we care not just about the stream of net benefits, but also about how these net benefits are distributed across a population, and over time.

Standard income measures, such as state-level gross domestic product (GDP), are critical indicators of the economy, and serve as important but imperfect proxies for this net benefit stream. GDP is an imperfect measure in that in does not account for the generation of non-market benefits (e.g., non-wage household work, and environmental amenity benefits and ecosystem services [e.g., clean air and clean water]), may not fully account for any depreciation of physical capital, depletion or degradation of natural capital, and net losses in social and human capital. Conceptually, we can think of an adjusted income measure that would better reflect the true net benefit stream that is generated by our total capital asset portfolio.

Sustainable development can be thought of as protecting or enhancing this adjusted income or net benefit stream. Protecting or growing this income stream requires protecting or growing the total capital portfolio that undergirds the state economy, such that the TK stock in any time period t, is non-declining ($TK_{t+1} \geq TK_t$). Meeting this condition requires investment in our total capital asset portfolio. Fundamentally then, sustainability is about our moral obligations to the future (Solow, 1991 and 1992) – don't deplete the total capital stock that we hand over to those that come after us in the chain of obligation to the further future.

In the extensive academic debates over defining sustainability, Bromley (1998) suggests focusing on the social bequests we make to the future. But, the open question in any sustainable development policy debate is what the *structure* of this bequest package should look like. Depending on society's value judgments and beliefs about future conditions, this bequest package may be kept relatively unstructured; for example, this might include holding a relatively larger proportion of highly fungible assets, or financial capital, and assume that human-made physical capital (PK) is always a good substitute for natural capital (e.g., ecosystems services such as clean air and water). This is sometimes referred to as a "weak sustainability" criterion,[5] and if all assets are fungible or highly substitutable, then the only constraint imposed is on the total capital stock, $TK_{t+1} \geq TK_t$. (Ayers et al., 1998).

[5] A common practical example given of a "weak sustainability" is the Norwegian Oil Fund, an investment fund that exceeded US $1 trillion in financial assets in 2018. Since the mid-1990's, it has been funded out of taxes on oil and gas exports. Investments by this sovereign wealth fund are restricted to only being made abroad (with stakes in more than 9,000 companies). A further governance constraint is that expenditures from the fund to support the current public budget can only be made out of what the fund makes in investment earnings, while the "principal is shared across generations" (Kapoor and Zeilina, 2017). However, in recent years there has been increasing debate on how the fund should be invested, with calls for the fund to be less invested in the finite extractive industry it is trying to replace, and to lessen climate risks. With some resulting changes, it has been argued that the fund's Norges Bank Investment Management and Council on Ethics should pay even greater attention to the governance mandate on sustainability (e.g., green initiatives, reducing climate risk, water and human rights protections) (Kapoor and Zeilina, 2017; and Sjafjell, 2017). For example, to analyze possible disinvestments, companies in which the fund holds stakes are now required to submit data on water use and climate effects to the non-profit Carbon Disclosure Project (Doyle, 2018). These criticisms can be seen as pushing fund governance towards meeting greater "strong sustainability" constraints (Nilsen, 2010), and are often viewed as ethical rather than economic issues (e.g., Sjafjell, 2017).

In contrast, society may make a value judgment to make investments in a much more structured bequest package. As a common example, this has typically been applied to increased investment in renewable energy resources, as we use up nonrenewable resources, in what is sometimes referred to as a "strong sustainability" criteria or constraint (Ayers et al, 1998). Under a strong sustainability criteria, "minimum amounts of a number of different *types* of capital…should be independently maintained" (Ayers et al., 1998, p. 4), which might be accounted in either financial or physical terms depending on the type of capital. Thus, in addition to the aggregate constraint, $TK_{t+1} \geq TK_t$, society's values may include particular investment levels to sustain or enhance particular types of capital (Brekke, 1997). This conceptual argument is most commonly applied to sustaining or enhancing particular types of *critical* natural capital, such as protecting endangered species, or the forested headwaters in a municipal watershed (see Berrens et al, 2001). But, it could also be applied to increased investment in particular categories of human capital as we move to a more skill-based economy (Bryl, 2018) and gradually reduce historical reliance on extractive fossil fuel industry sectors in a regional economy (see: Brekke, 1997; and Slaus and Jacobs, 2011).

New Mexico has significant energy resources, both nonrenewable (e.g., coal, oil and gas) and renewable (e.g., wind and solar). New Mexico ranks 4th in the nation as a net energy exporter (NM EMNRD, 2018). Although coal production has been declining slowly since the late 1990's, there have been rapid increases of late in crude oil production and natural gas from shale wells. Based on recent U.S. Energy Information Administration (2018) data, NM currently ranks 3rd in the U.S. in crude oil production (through September 2018), 9th in natural gas production (through 2017) and 12th in coal production (through 2017). Total production and consumption of renewable energy sources remain relatively small (e.g., 5% of consumption in 2012, and concentrated in the electricity sector). However, there has been significant growth (e.g., quintupling in the 2002-2012 period) particularly in wind energy production (11% of generation in 2016) (U.S. Energy Information Administration, 2018), and NM ranks high in future potential production (11th in wind and 3rd in solar) (NM ENRD, 2018). NM Governor Michelle Lujan Grisham (2018) set inaugural goals of producing 50% of state energy from renewable sources by 2030, and 80% by 2040.

All these energy resources represent capital assets that are critically important to the NM economy, in both the private and public sectors, now and in the future. The current reliance of the state of New Mexico on the oil and gas industry is often considerably underestimated, especially the industry's combined direct and indirect effects on state public finance (NMTRI, 2015).[6] But, as extraction of finite nonrenewable energy resources eventually declines, and efforts to diversify the economy and mitigate climate change from greenhouse gases increase, there will be inevitable transition to less reliance on fossil fuels, including greater dependence on the production of renewable energy. However, as noted by Raimi and Newell (2016, p. 1):

[6] Over the 17-year period from 1997-2013 it has been estimated that the oil and gas industry accounted for an average of 8.44% of the state GDP (NMTRI, 2015). However, state public finance was much more heavily dependent on oil and gas. For 2007-2014 period, it was estimated that directly and indirectly oil and gas accounted for an average of 32% of the state general fund. (NMTRI, 2015).

> "Over the coming decades, most projections forecast that US production will likely remain at or near historically high levels …, suggesting that oil and gas will continue to play a major role in numerous state and regional economies."

This appears to hold in the case of New Mexico.

Spurred by cost-reducing, technological change (e.g., combined improvements in three-dimensional seismic imaging and testing, horizontal drilling, and hydraulic fracturing [U.S. EIA, 2018]), prominent trends in NM energy resources are seen in Figures 1, 2 and 3 (as sourced from the U.S. Energy Information Administration, 2018). Since the start of the current decade (2010) through the end of 2017, New Mexico has seen a quadrupling in field production of crude oil (Figure 1), a ten-fold increase in natural gas production specifically from shale wells (Figure 2) [although natural gas production overall has remained relatively flat], and a near tripling of known proved reserves of crude oil + lease condensate (Figure 3). These significant increases are sourced primarily in the Permian Basin province, which covers part of southeastern NM and western TX.[7] Future increases in reserve levels in New Mexico may be substantially larger than the tripling above, as the U.S. Geological Survey (2018) recently announced their assessment that the Wolfcamp Shale and the overlying Bone Springs Formation in the Permian Basin province appears to hold the largest known oil, natural gas, and natural gas liquid resource in the U.S., and one of the largest in the world (the estimate consists of undiscovered, technically recoverable resources[8]).

Thus, as we continue to significantly extract nonrenewable fossil fuels in NM, we use up one slice or part of our total capital (TK) asset portfolio. Doing so produces a current income stream, a part of which is paid to the state of New Mexico in the form of scarcity rents (leases, taxes and royalties). Doing so can also be consistent with sustainable development as long as we mitigate damages to the capital portfolio (e.g., minimizing environmental damages), and re-invest some of the scarcity rents of using up the resource (now rather than later) back into the TK portfolio. [9] Systematically re-investing part of the income stream generated today, rather than simply allowing the full amount to flow into, say, consumptive goods, is one of the ways an economy approaches a sustainable development path, and avoids the kind of resource curse, which has historically plagued third world countries (Venables, 2016; but also see James and Aadland, 2011, for U.S. county evidence). It is also a way to minimize some of the disruptiveness commonly associated with the boom-and-bust cycles of fossil fuel extraction, and providing

[7] For more detailed information on the history and geography of oil and gas production in the Permian Basin, and in New Mexico, see U.S. Energy Information Administration (2019).

[8] Undiscovered resources are estimated to exist based on geologic knowledge and already established production. Technically recoverable reserves are those that can be produced, given currently available technology. This does not guarantee profitability.

[9] In contrast to the marginal extraction costs of resources employed in the extraction of a nonrenewable resource, scarcity rents refer to the marginal opportunity imposed on future generations of extracting or using up one more unit of a finite resource today, rather than saving it for the future. That, is the benefits are no longer available for the future. A portion of these scarcity rents are publicly collected in the form of leases, taxes and royalties imposed on nonrenewable resource extraction.

some consumption or expenditure-smoothing over time in an economy (Saha and Muro, 2016). Thus, promoting a capital/investment perspective is a key to building far-sightedness into our governance and economic policy approaches

III. The State Permanent Funds, and Consideration of Increased Distributions to ECE

The Combined Role of the Permanent Funds in New Mexico

As a state addresses a period of significant growth in nonrenewable resource extraction, it must address the question of how to best use the public revenue streams that are generated for the state (Morris, 2016; Raimey and Newell, 2016).[10] This represents a set of investment-vs-current consumption choices. Thankfully, through the far-sightedness of prior state administrations, the re-investment of scarcity rents from nonrenewable resource extraction, and the promotion of an investment perspective has a long history in New Mexico (see NM SIC, 2018; and Williams, 2008). At the state government level, this is reflected in the stewardship of two primary endowment funds for various public beneficiaries.[11]

To place in recent terms, for the 5-year period 2013-2017, from *nonrenewable* resource extraction (primarily oil and gas), the state of New Mexico collected *combined revenues* from severance taxes and State Lands Office (SLO) lease revenues of $4,818,965,083 ($0.964 billion annual average) [NM SIC, 2018]. This excludes any local taxes collected. A significant slice of these total revenues – just less than 40% – was diverted for current debt service expenditures on bonds issued for capital projects (i.e., investments in physical capital [PK]). The remainder was transferred into publicly-managed endowment funds (with a combined market value of about $17 billion at the start of the period [2013]), where it was merged with investment earnings to allow annual percentage "distributions" or draws. These annual distributions were restricted by statute to the 4.7% to 5.8% range, depending on the fund and year, and totaled about $3.875 billion over the 5-year period ($0.775 billion annual average) [NM SIC, 2018]. There are further legal restrictions on how distributions are allocated to particular public beneficiaries. The rules attempt

[10] State and local governments generate public revenues from fossil fuel production through a variety of mechanisms. These include: (i) state taxes levied on the value or volume of oil and gas produced; (ii) local property taxes levied on the value of oil and gas property; (ii) oil and gas lease revenues from state lands; and (iv) oil and gas lease revenues (or royalties) from federal lands, with a proportion shared back to the state. To give a sense of scale prior to the significant current boom in the Permian Basin, in FY 2013 the value of oil and gas production in NM was $13.2 billion (from 93 million bbl of oil production, and 1199 million bcf of gas production) (Raimi and Newell, 2016).

[11] The endowment funds are a form of sovereign wealth funds, so-called because they are established by a nation or state government to "deposit a portion of revenue in an investment account intended to generate returns that will be used to achieve a specific public purpose or set of goals" (PEW, 2016, p. 2). They are commonly used in the US by energy-producing states to divert part of publicly-collected revenue stream from the leases, taxes and royalties from the extraction of fossil fuels; the funds then have highly varying distribution rules for funding some public purpose (often just general funds for the state budget). For discussion, reviews and comparisons of state funds, see: Boettner et al., 2012; PEW, 2016; Rabe and Hampton, 2016); and Saha and Muro, 2016.

to balance support of current public beneficiaries, while protecting and if possible growing the corpus of the funds to replace the finite oil and gas revenues and sustain the real value of the annual distributions out into the future.

The state of New Mexico has two main endowment or permanent funds – the Severance Tax Permanent Fund (STPF) and the Land Grant Permanent Fund (LGPF), which together are a critical component to state public finance, and primarily generated via the extraction of nonrenewable natural capital (oil and gas; and minerals). Both funds are managed by the New Mexico State Investment Council (SIC), which operates under various state statutes. As reported by the NM SIC (2018, p. 3) the two endowment funds:

(i) "have contributed $6.2 billion to the state, while the value of the funds has increased by $9.7 billion, growing to $23.6 billion" over the last eight years;"[12]
(ii) "provide approximately 15 percent of our state budget — $968 million in FY 2019".[13]

Although difficult to fully assess without some kind of general equilibrium model, the combined distributions from these funds to the various beneficiaries (e.g., public schools and universities, specialty schools, select hospitals and prisons, as well as the state general fund) help keep downward pressure on state taxes. Together, they constitute the 3rd largest "sovereign wealth" or endowment fund in the nation (now trailing only Alaska and Texas). The operation of each of these endowment funds can be examined in more detail.

The Severance Tax Permanent Fund

Beginning with the smaller of the two primary state endowment funds, the Severance Tax Permanent Fund (STPF) was created by state statute in 1973 (and 1976 by constitutional amendment), and is managed by the State Investment Council (SIC). Taxes imposed on the production of oil and gas, or other natural resources as they are taken (or severed) from the ground generate the money flows into the STPF. Specifically, the revenue comes from the annual severance tax collections to the state, but only after the state pays debt service requirements on severance tax bonds. Boettner et al. (2012) cites a then approximate flow of 12.5% into the STPF. However, the exact percentage can and has varied greatly due to the complicated way this fraction of severance taxes is transferred to the STPF, and the different targets or restrictions that have been set over time (see Schardin Clarke, 2013 and 2015).

Severance taxes collected are first transferred into the state's Severance Tax Bonding Fund. These funds are used to be meet debt service requirements on bonds used by the state, under the Severance Tax Bonding Act, to finance capital projects. Then, excess amounts are transferred twice a year to the STPF (NM SIC, 2018). As noted, the so-called "spend/save ratio" and

[12] For historical reviews, and graphing (not replicated here) of the long-term growth of each of these endowment funds, see NM SIC (2018).

[13] FY 2019 appropriations for New Mexico state budget were $6.381 billion (LFC, 2018c, p.29), and $968 million equates to 15.17% of these appropriations.

resultant total amounts transferred *into* the STPF can vary greatly, ranging in the last five years from a low of $38 in 2017 to a high of $124K in 2014 (NM SIC, 2018). As passed in 2015, there is currently a set of phased-in changes that will increase the percentage of severance taxes transferred into the STPF up to 13.5% by FY 2022 (NM SIC, 2018, p. 10).

After this funnel through the Severance Tax Bonding Fund, the STPF holds the revenues accrued from: (i) the allocated severance taxes; and (ii) investment earnings on the fund. Inflows of severance taxes into the STPF over the last 11 years (2007-2017) have totaled only $343K. For the most recent decade (as of June 30, 2018), the 10-year average annual net-of fees investment earnings for the STPF was 5.50% (but this can vary higher or lower depending on the 10-year period chosen over the last generational time frame [e.g., since 1989]) (RV Kuhn, 2018). The corresponding gross-of-fees annual average was 5.70% (RV Kuhn, 2018). For perspective, as established by the SIC in 2015 in managing its investment portfolio, the current annual investment return *target* is 6.7% for the STPF (NM SIC, p. 23).[14]

As of December 31 2017, the net asset value of the STPF was $5.11 billion. From this fund balance, NM statutes provide for an annual distribution of 4.7% percent of the average of the year-end market values of the fund for the immediately preceding five calendar years. The current distribution goes to the state general fund (the single public beneficiary) and is used for public education, infrastructure and economic development, and in recent years has amounted to approximately $200 million annually (see: LFC, 2018a).

Using this saving and investment mechanism, the conceptual argument can be made that the STPF rules on annual distributions (i.e., 4.7%) help smooth out the inherent volatility in tax receipts from oil and gas production, and help generate renewable revenues from the finite extraction of nonrenewable natural resources. Also, since 1982 a constitutional amendment removed the option of appropriating money from the corpus of the fund. Thus, any proposal to tap into the STPF would require a new state constitutional amendment. The volatile nature of the STPF distributions, where severance taxes are pushed first through the funnel of debt service obligations, have made such proposals relatively rare. (However, for a public safety example proposal, see LFC [2018a]). With exceptions for financing particular economic development goals or luring particular industries to NM,[15] these institutional arrangements help the SIC manage the STPF and protect the "real value of the fund for future generations" (NM SIC, 2018).

While the STPF itself may be prudently managed by the SIC for the citizens of NM, the entire severance tax mechanism shouldn't be described as one of *fiscal* conservatism. The idea that the finite scarcity rents from oil and gas - nonrenewable natural capital (NRNK) - are primarily being moved into renewable financial capital (FK) clearly does *not* describe severance taxes and the way they enter the STPF in NM. To wit, from 2012-2017, collected severance taxes in NM

[14] This is presumed to be gross-of-fees, since it is not described as net-of-fees.

[15] By statute, the SIC is allowed to use STPF monies for "several economically targeted investment programs". Since 2002, this authorization has been used to make 25 interest-free loans to film and television production (NM SIC, 2018, p. 9). Such use of severance taxes is not without criticism (see discussion in Williams, 2008).

totaled about $2.5 billion. Whereas, severance tax STPF contributions over the same period were only $238 million, or less than 10% of the total (NM SIC, 2018).

More predominately, severance taxes are used for debt service on Severance Tax Bonds, which are issued by the state to finance a wide variety of *physical capital* (PK) projects every year. The PK projects come with the own risk/return calculations.[16] These projects include legislative-priority capital projects, Colonias, Tribal and water projects (referred to as "Senior" severance tax bonds, as authorized by the legislature, and with priority liens in case of default), as well as public school facility capital projects (referred to as "Supplemental" severance tax bonds, as certified by the Public Schools Capital Outlay Council), and even shorter term notes (see Schardin Clarke, 2013 and 2015).

Returning to our broad sustainable development perspective, this use of scarcity rents from extraction of NRNK reflects a choice (and value judgement) about the structure we want to impose on our state's total capital portfolio. As recognized by the former Director of the State Board of Finance, the bonding program and the STPF are both productive capital assets and worthwhile competing uses of severance tax revenues (Schardin Clarke, 2013, p. 12): "[C]apital projects financed with STB's – like Permanent Fund contributions – are also an investment in the future of New Mexico."

Although commonly seen as part of the larger bundle of endowment funds managed by the NM SIC (2018), the STPF is of smaller scale and more "growth challenged" (as acknowledged by the NM SIC, 2018). For the 2007 to 2017 period, the net compound annual growth rate (CAGR) in the market value of the fund was approximately 1%. Thus, it is perhaps not surprising that it has been the LGPF, rather than the STPF, that has been targeted by proposals for increased distributions for supporting ECE.[17]

The Land Grant Permanent Fund

The Land Grant Permanent Fund (LGPF), also referred to as the Permanent School Fund (Article 12, Section II of the New Mexico Constitution), was created with entry to statehood by New Mexico in 1912, following the granting of public ownership of specific tracts of land (scattered across the state) to the state of New Mexico as conferred in the *Enabling Act of 1910* by the US Congress (and the earlier *Ferguson Act*). Individual tracts of land have targeted beneficiaries (more than 20 in total). With various sales and exchanges over time, there are now roughly 9 million surface acres and about 13 million acres of subsurface mineral rights (see Appendix A),

[16] For a recent critique of the efficiency of public infrastructure spending, including the bonding and capital outlay process in the NM state legislature, see Nathan and Fisher (2015).

[17] However, within the larger state structure of savings and investment from oil and gas revenues, the "spend/save" ratio for using severance taxes is a policy lever that can and has been used. For example, if a tighter restriction on capital bonding was implemented, and the associated debt servicing on these bonds out of the Severance Tax Bond Fund, then this would increase inflows to the STPF. Then, the 4.7% distribution (with 5-year averaging) out of the STPF would grow in absolute magnitude and increase flows to the general fund (as the sole public beneficiary). Such increases could be used to increase current appropriations in targeted areas, such as ECE.

which are managed by the NM State Lands Office (SLO). These state trust lands generate revenues (royalties on oil and gas production, grazing leases, etc.). Renewable revenues, such as earned from grazing leases, go directly to the targeted beneficiaries for specific tracts of land (through the Land Maintenance Fund). Revenues from a nonrenewable source (e.g., oil and gas production) are distributed into the LGPF, and then a percentage distribution is made annually to the beneficiaries out of the LGPF. Investment of fund balances, in various financial assets, also generates investment earnings, so that the fund grows over time, with various market swings. Just as with the STPF, the LGPF is managed by the SIC.

From the beginning corpus of the LGPF at the start of any fiscal year, revenues are generated into the fund from: (i) royalties and land sales, from the SLO income; and (ii) investment earnings. Inflows from the SLO to the LGPF from royalties and land sales over the last 11 years (2007-2017) have totaled $5.43 billion. For the most recent decade (as of June 30, 2018), the 10-year average annual net-of fees investment earnings for the LGPF was 6.08% (RV Kuhn, 2018), but this can vary higher or lower depending on the 10-year period chosen over the last generational time frame (e.g., since 1989).[18] The corresponding gross-of-fees annual average was 6.27% (RV Kuhn, 2018). For perspective, as established by the SIC in 2015 in managing its investment portfolio, the current annual investment return *target* is 7.0% for the LGPF (NM SIC, p. 23).[19]

With these two growth sources, as of October 2018, the net asset value of the LGPF was $17.3 billion (NM SIC, 2018; and New Mexico State Lands Office, 2018). From this $17+ billion endowment, currently the state law distributes 5 percent annually (of the average preceding five-year market value) from the net asset value of the LGPF, to the various public beneficiaries, with most of this going to public schools ("Common Schools"), but also public universities, hospitals, prisons, and special schools. For the full list of public beneficiaries, with their dedicated acreage (surface and mineral), see Appendix A. This rate of distribution has been altered before. For example, previously, to pay for state educational reforms, this distribution rate was temporarily raised in 2003 by a voter-approved constitutional amendment from 5% to 5.8% for FY 2005 to FY2012, then dropping to 5.3% in FY 2013 to FY 2016, and back to 5% in 2017 (see Williams, 2018). For the seven-year period 2013-2019, $4.388 billion (about $627 million annual average) will be distributed to public beneficiaries, with a projected high of $747 million in FY 2019.

Using the LGPF to Support Increased Investments in Early Childhood Education

The idea of drawing from the LGPF to specifically invest in ECE in NM is not a new one (see review in Garcia, 2015) and there have been numerous analyses, a variety of prior legislative bills considered and proposals debated, and more are likely to emerge. The oil and gas boom in the Permian Basin (Robinson-Avila, 2018), coupled with prior decade of sustained growth in the

---

[18] LFC (2018b) reports LGPF "net investment returns for the 1/3/5/10 years ending November 2017 were 15.4 percent, 6.7 percent, 8.9 percent and 5.2 percent respectively over those time periods." LESC (2013) reports average annual percentage investment returns for fiscal years 1989-2010 were 8.45% (but this not identified as net-of-fees).

[19] This is presumed to be gross-of-fees, since it is not described as net-of-fees.

stock market (although buffeted by recent downswings in the last quarter of 2018), are pushing these proposals into the forefront of public debate.

Diverting any incremental percentage from LGPF is a complicated matter. Any proposed changes have to pass both chambers of the state legislature, and then be approved by voters in a state-wide ballot. Further, although not required or dealt with in the 2003 LGPF amendments altering the distribution rate to fund "educational reforms" (now phased out), there has also been an argument that altering distributions to add an increment supporting an alternative beneficiary (e.g., ECE) would require US Congressional approval (i.e., modifying the *Enabling Act of 1910*) (see LESC, 2013). However, the increment to the distribution could be restricted to the "Common Schools" component of the LGPF lands and beneficiaries (and presumably with subsequently-funded ECE programs run by the public schools), lowering the estimate for any given percentage increment (see LESC, 2013; and Kinney 2017). Thus, a 1% increment restricted to the Common Schools component of the LGPF beneficiaries would be equivalent to about a 0.85% increment.

Recently, in 2018 Governor-elect Michelle Lujan Grisham proposed drawing a total of $285.5 million over 5 years ($57.1 million annually) from the LGPF to fund ECE programs, such as state-wide pre-K (Nott, 2018). Alternatively, one recent 2018 proposed constitutional amendment, requiring state-wide voter approval, would have allowed an additional 1% draw from the LGPF (from 5% to 6%), or an estimated $159 million annually beginning in FY 2020 to be directed to ECE (McKay, 2018; Oxford, 2018; LFC, 2018b).[20] ECE was defined as:

> "Nonsectarian and nondenominational services for children until they are eligible for kindergarten. Such services may be provided by a school district or an entity of an Indian nation, tribe or pueblo." (Ballotopedia, 2018).

As noted, a variant on this would be to restrict the 1% increment to the "Common Schools" component of the LGPF beneficiaries, which generates an estimated $112 million annually (see Kinney, 2017). Another proposed alternative would leave the 5% distribution constraint on the LGPF in place, but earmark a portion of annual revenue gains (e.g., from investment gains from the financial assets) for ECE (McKay, 2018). Yet other proposals have suggested the SLO

[20] HJR1, 2018 (similar to HJR1, 2017), would have amended Section 7 Article XII of the New Mexico Constitution to allow allocation of an increment of 1% (above the 5% annual distribution) of 5-year average of year-end market value LGPF specifically to early ECE beginning in 2020 (see: Ballotopedia, 2018 and LFC, 2018b). The 1% increment would be initially split out into administrative program implementation and development in the first two years before full expenditure to ECE services in 2022. Protections to the corpus were provided in the following ways under HJR1 2018: (i) the New Mexico State Legislature would have been authorized to suspend the one percent distributed to early childhood services by a three-fifths vote in each house (LFC, 2018b); and (ii) no incremental distributions would be made from the LGPF to ECE if the if the preceding 5-year average of the year-end market value of the LGPF were to drop below $10 billion. HJR1, 2018 passed the House, but was not moved through the Senate Finance Committee before the end of the 2018 Legislative session. For a constitutional amendment to be moved to state ballot for voter consideration, both chambers need to approve the proposed constitutional amendment by a simple majority vote during the same NM legislative session (Ballotopedia, 2018).

buying new lands and then targeting the earnings from these lands to ECE (see discussion in Dannemann, 2018). In this way, the basic structure of the LGPF, connecting specific beneficiaries to specific tracts of state lands, is retained (if ECE were somehow defined as a new beneficiary and not part of the Common School beneficiaries). But, perhaps no proposals have generated more specific debate than those to add an increment (e.g., 1%) to the annual LGPF distributions, with this general increment to be used to support ECE (see discussion in Oxford, 2018), which may or may not emerge with the restriction to the Common Schools component (e.g., Kinney, 2017).

If such a proposal were to be approved by the Legislature and presented to voters, then an appropriate question is whether increments to annual distributions from the LGPF are likely to be viable over an extended time frame. If the question is restricted to one of the *sustainability of the endowment fund* to make non-declining real annual distributions to beneficiaries and support ECE, then this requires the total distribution rate to be less than the real growth rate. This can be framed as whether the combination of the current distribution rate (5%) plus any increment for ECE (e.g., 1%) are less than the total of (i) the real rate of inflow SLO transfers due to oil and gas production; and (ii) the real rate of investment earnings. If (i) is eventually declining to zero, then the rate of total annual distributions has to be less than (ii). Thus, proposals to add a 1% increment, possibly with a Common Schools restriction, (or some lesser alternative, as proposed by Governor elect Lujan Grisham [Knox, 2018]) to the current 5% annual distribution from the LGPF need to be put into context.

Over the 18-year period from the beginning of fiscal year 2000 (when the beginning market value was $7.31 billion) to the end of fiscal year 2018 (with an ending market value of $17.53 billion), the LGPF's (net) compound annual growth rate (CAGR) was 4.71%. This is the net CAGR of the fund *after* accounting for the outflows the LGPF made in annual distributions, which average for the period slightly over 5% (varying up to 5.8% annually), to its targeted beneficiaries. And, this 18-year period included several recessionary downswings (2001-2002, and 2008-2009.[21]

Assuming long-term estimates for the annual rate of inflation are 2% (CBO, 2018, p. 28), and if an approximate net CAGR of 4.71% were to hold over the next half generation (conservatively,[22] as we face significantly increased production in oil and gas production in NM [see Robinson-

[21] The choice of time frame will affect the calculated net CAGR. The net CAGR for the LGPF from the longer 30-year time frame (beginning of FY1989 to the end of FY 2018) is 6.33%. Again, this CAGR is after accounting for annual distributions from the LGPF to beneficiaries. The complication with this longer time frame is adding greater variability in annual distribution rate to beneficiaries (restricted to income and dividends only from 1989 to 1995; 4.7% from 1996-2005; 5.8% from 2006-2013; 5.3% from 2014-2017).

[22]A conservative estimate may be appropriate as tax revenues from the oil and natural gas production are impacted not only by the volume produced, but also by the price of oil or gas, as New Mexico's energy taxes are based on taxable value. Thus, the net price (price less allowable costs) also impacts revenues. Increased production may negatively impact price, resulting in an increase in tax revenues from the increased volume (period to period), but a decrease tax contribution per unit due to lower prices. The net impact depends on the relative magnitudes of these two effects.

Avila, 2018]), then it would leave about 2.71% to cover the 1% increment in LGPF distributions to support increased investment in ECE, while protecting and even growing the starting corpus of the LGPF (and see LFC 2018b, p. 2).

For further context, as established by the SIC in 2015 for managing its investment portfolio, the current annual investment return *target* is 7% for the LGPF (NM SIC, p. 23), which is slightly lower or more conservative than previous performance targets (i.e., recently 7.5%, and before that 8.5% [LESC, 2013; and NM SIC, 2018]). The 7% target is slightly above the average realized annual net-of-fees investment return of 6.08%, and annual gross-of-fees investment return of 6.27%, for the most recent decade (as of June 30, 2018) (RV Kuhn, 2018). But, at some date in the further future, if SLO transfers from finite oil and gas production to the LGPF were to be greatly reduced (or only marginally replaced by alternative land uses and development), then the conditions on meeting sustainability of the fund becomes more difficult. Specifically, with some accounting for inflation to protect real expenditures against some benchmark, then the condition becomes much tighter (e.g., (5%+1%) < (% real rate of investment earnings+ % reduced rate of SLO inflows)).[23]

Recognizing these risks, and as a counter to these proposals, it is often argued that fiscal conservatism requires protecting an endowment fund (i.e., conservative distribution rules to protect the corpus) so as not to *lower* future growth of the fund. This is sometimes combined with alternative arguments to support increased funding for ECE through the legislative appropriation process (e.g., raising taxes or reallocating resources).[24] To wit, consider one recent editorial opinion at the end of 2018, directed to an incoming gubernatorial administration (Albuquerque Journal Editorial Board, 2018):

> "On that topic, they should also ignore the advocacy rhetoric that the state's Land Grant Permanent Fund is a rainy day kitty to be tapped for any well-meaning yet

[23] Prior financial analyses show that 1% and 1.5% increments in distributions, above the base distribution, would be allowable within the net growth of the LGPF, after accounting for the expected rate of inflation, while protecting the corpus of the fund (Advantage Business Consultants, 2014). This was shown with both a cash flow analysis approach, and a value of assets approach (which assigns a market value for the State Trust Lands at $6.2 billion in 2014). For example, for the 23-year period of 1990-2012, in average annual terms, investment gains were 7.8%, SLO contributions were 3.6% (for a combined annual growth of 11.4%), and distributions were 5.7%. This left 5.7% net annual growth in the LGPF, against an inflation rate over the period of 2.8%. The residual left 2.9% real growth to cover increments (1% or 1.5%) in the distribution rate while protecting the corpus and even allowing some further growth (Advantage Business Consultants, 2014).

[24] For an excellent public debate of these issues see KNME-TV's New Mexico In Focus program, aired in May of 2013: https://www.youtube.com/watch?v=3jxdcwK-5HY&feature=youtu.be The debate and its time period (2013), when the market value of the LGPF was approximately $11.5 billion illustrates an important point about protecting real value from a fund. The proposal at that time for an increased draw from the LGPF for supporting ECE was essentially the same as seen more recently in 2017 and 2018. The year ending value of the LGPF in 2017 was $17.11 billion, and then $17.3 billion as of mid-2018 (New Mexico State Lands Office, 2018). The issue is that there needs to be a benchmark, or it is hard to understand what protecting real value means. The NM SIC (2018) doesn't define any year benchmark.

> vaguely defined program that tugs at heartstrings – it is a sovereign wealth fund established to provide New Mexico with a meaningful income stream when oil and gas revenues dwindle – either as those finite resources are tapped out or as green energy takes their place. It must remain healthy as it funds a tenth of our state budget. And so as gasoline prices slide and worries of an impending recession loom, raiding it to throw what amounts to our children's savings at problems just to keep a campaign promise is irresponsible to the nth degree."

Ceteris paribus, from a with and without perspective, increased draws *would* lower future growth of the endowment funds.[25]

But, again, the state endowment funds are not trust funds where investment returns are the only earnings inflow. The question is what we project over what time period, as transfers from SLO earnings to the LGPF, from increased oil and gas production (Figures 1 and 2). If this is expected to be large (e.g., see Robinson-Avila, 2018), and for an extended period (Figure 3), then for many ECE advocates, this may be an opportune time to push for an increased ECE investment, perhaps with a set of safeguards (e.g., phasing in, establishing "failsafes" that protect the corpus above some benchmark [e.g., December 31, 2018], requiring outcome evaluation, etc.). As one piece of evidence, newly-elected Governor Michelle Lujan Grisham's inauguration speech pointed in this direction (M. Lujan Grisham, 2019):

> [W]e will install an Early childhood Education Department; we will, all of us together, make the conscientious choice and pull a responsible pinch of additional money from our Permanent School Fund to give our children the right start they deserve.

Thus, additional proposals to use the LGPF to fund increased investments in ECE are likely to emerge in 2019.

Further, from a broader *sustainable development* perspective for the state, as reviewed earlier, arguments for fiscal conservatism with managing the LGPF (non-declining FK) have no monopoly on economic reasoning. Like other investment opportunities, focusing too narrowly on financial capital assets comes with its own set of risks. This is regularly considered by SIC reviews of asset allocation, as they attempt to balance the risks and returns in the diversified

[25] As one example calculation (LFC, 2018b, p. 2), a 1% incremental distribution (from 5% to 6%) to support ECE, would lower expected 12-year growth (2020-2032) in the net value of the LGPF by $2.91 billion (from $31.59 billion to $28.91 billion ending value). The assumptions included: investment net-of-fee returns of 6.8%, SLO contributions of $495 million in CY2018 and growing 1.5% annually. There was no restriction of the 1% increment to Common Schools component. The SLO contribution growth rate appears conservative given expected growth in NM oil and gas production (Figure 1). For perspective on this $2.91 billion reduced value in the LGPF in 2032, James Heckman has stated: "If just one year's high school dropouts could be converted to high school graduates, New Mexico households would have an additional $3.1 billion in accumulated wealth over the lifetime of the students from the graduating class." (See Advantage Business Solutions, 2014, p. 7).

portfolio for the permanent funds. But, there is no complete protection from equity market volatility, as buffeted by political uncertainty both at home and abroad, or in the worst scenarios even from malfeasance (e.g., as the state of New Mexico SIC has experienced with select financial advisors).[26] Rather, prudent choices for sustaining and enhancing the total capital portfolio (a condition for sustainable development) requires pursuing investment opportunities that pass benefit-cost tests, and generate a significant return on investment (ROI) for the people of the state. Just as GDP can be an imperfect measure of state income, financial instruments are not our only capital investment alternative (as recognized by the SIC in their own diversified holdings). Long-standing advocates for ECE (see: New Mexico Voices for Children, 2010; and CHI St. Joseph's Children's Health – see Kinney, 2017, and Advantage Business Consulting, 2014) are essentially arguing for increased human capital (HK) investments. Similarly, these investments come with their own risk (e.g., potential for mismanagement, lack of oversight, etc.) and return considerations. But, the assessment is that ECE investments will generate their own net benefit stream for the state, even if calculated outside the performance of the permanent funds.

A similar line of reasoning was made in the Fiscal Impact Report (FIR) for the 2003 Amendment to LGPF distributions (now phased out) for educational reforms:

> "The decision to deplete an endowment is a policy decision rather than a financial dictum or a 'best practice.' The real question is whether the benefits of the expenditures will outweigh the benefits of greater income tomorrow." (see LESC, 2013, p. 4).

We would reframe this slightly – and more wonkishly -- as a choice between sustainable development investment alternatives; the real question is whether making a draw from an endowment for increased investments in ECE will generate a present-valued net benefit stream that is larger than the present-valued income stream (investment earnings) of keeping that draw in the endowment, while meeting a sustainable development constraint of a non-declining total capital portfolio. It is a much more complicated question then simply tracking the size of an endowment fund.

[26] After a restructuring in 2010, the New Mexico State Investment Council (SIC) has entered into more than two dozen settlements with financial firms and investment consultants since 2011 (Boyd, 2018). However, litigation initiated in 2011 claimed "the state lost hundreds of millions of dollars through pay-to-play and politically motivated investments…" (Boyd, 2018). To date, less than $50 million of settlements have been agreed to, and lawsuits against remaining defendants are scheduled to move forward in 2019. The point is that financial investments of public funds, especially when engaged with allocation decisions or active management that tries to outperform standard market indices, can come with risks (as well as the potential for higher returns) above and beyond standard market volatility (and see Advantage Business Solutions, 2014). The order of magnitude in lost funds in the NM over the last decade are not dissimilar to some of the more conservative proposals to divert endowment funds revenues into increased investment in ECE (e.g., see Nott, 2018). As just one current example of these risks, recent SIC meetings materials describe a $100 million commitment of NM permanent funds by the SIC, based on the recommendation of their advisors, into a privately-managed investment platform; this private entity appears to not provide financial statements as a standard operating procedure to limited partners, as the SIC would be in this case (See SIC discussion P. 5., Minutes of the SIC, 10.23.18).

IV. The Economic Case for Early Childhood Education

A compelling case exists for investing in human capital as a means of economic development. A large body of evidence spanning multiple disciplines demonstrates that multiple dimensions of human capital, including traits such as cognition, education, and social and emotional competencies (sometimes referred to as "noncognitive skills"), are important predictors of numerous economic, demographic, and social outcomes related to individual well-being (e.g., Dawson et al. 2000; Meany 2001; Blau and Currie 2006; Cunha et al. 2006; Heckman et al, 2006; Knudsen et al. 2006; Heckman 2007; Marshall and Kenny 2009; Curley et al. 2011). Indeed, the modern economy is increasingly a skill-based economy (e.g., Bryl, 2018). Recent decades have witnessed the rapidly increasing prevalence of skill-based technologies and a subsequent increase in demand for educated and skilled workers qualified to use these technologies. Consequently, during the last several decades the economic return to education (i.e., the economic benefits of additional schooling) has also increased, resulting in an expanding earnings gap between more- and less-educated workers. For example, in 1974, the percentage difference in median annual earnings between individuals with a high-school diploma and those with a Bachelor's degree was 45%. By 2017, this difference increased to 74%.[27] The increasing importance of education and skills to economic success is widely recognized by policymakers. Consequently, many advocate for policies that increase access to college such as tuition and family income support for disadvantaged families and children during the college-going years. However, without complementary interventions targeting early childhood, evidence questions how much these policies will reduce schooling gaps among racial and socio-economic groups. For example, Carnerio and Heckman (2002, 2003) suggest that gaps in college enrollment between high- and low-income families are largely explained by academic skills gaps across these groups more than the income gaps themselves. After controlling for academic skill formed by adolescence, differences in family income and tuition support only play a minor role in explaining disparities in college enrollment. Instead, most of the family income gap observed in college enrollment is the consequence of long-term disparities in the determinants of the cognitive and non-cognitive skills required to realize the benefits of college (Cunha et al., 2006; Cameron and Heckman 1999, 2001; Carneiro and Heckman, 2002, 2003). Non-cognitive skills include characteristics associated with academic and labor market success, including persistence, self-control and conscientiousness. Skills gaps open up long before the college going years. They often open up before schooling even begins in early childhood (Heckman, 2008).

The early years of childhood are foundational for the development of a wide range of human abilities and characteristics that are important for adult economic well-being. The formation of cognitive and non-cognitive skills consists of multiple stages and continues throughout childhood. Developmental events occur in a cumulative fashion with each new event building on previous events. Therefore, even small disruptions can have long-term effects on the structure and functional capacity of the brain (Grantham-McGregor et al., 2007). Thus, although development continues throughout life, certain traits and skills are more easily attained in certain stages of childhood than in others. These stages are often referred to as `sensitive periods' of development. During sensitive periods, a child's neural development and the behaviors governed by this development is most plastic and therefore susceptible to interventions and environmental

[27] Data from the U.S. Census Bureau's American Housing Survey (1974) and 2013-2017 American Community Survey's 5-year estimates.

influences (Knudsen et al, 2006). The early years of childhood are often thought of as a sensitive period for development of numerous traits and skills. During the sensitive period of early childhood, human development and skill formation is highly sensitive to aboth positive and negative inputs, interventions, and events, making this period foundational in shaping the skills and traits important to adult economic well-being. Consequently, across socio-economic groups, gaps in these skills and traits open up early and persist throughout life (Heckman and Masterov, 2007). A large body of evidence demonstrates that various early childhood experiences and outcomes are important predictors of a broad range of later life outcomes including school attainment, occupation type, adult earnings, and numerous other demographic, behavioral, and economic outcomes (e.g., Alderman et al. (2006); Almond and Currie (2011); Barker (1998); Blau and Currie (2006); Dawson et al. (2000)).

Research on early childhood education has produced numerous observations on human development and why the early years are so important. First, cognitive and non-cognitive skills are built on a foundation of already formed skills. Early leaning engenders increased motivation for additional learning making learning self-reinforcing. Also, early learning makes later learning easier, more efficient, and thus more likely to continue (Knudsen et al., 2006). Thus, inventions occurring later in childhood or adulthood have proved to be much less effective at remediating skills gaps than those occurring in early childhood (Cuhna et al, 2006). As a consequence, the returns to interventions targeting education and skill formation tend to decline the later in the life cycle the intervention is initiated. Figure 4 illustrates the rate of return to human capital investments depending on the age at which investments or interventions are initiated. Returns to these interventions decline as the child ages. Sometime during the school years, it is thought that this rate of return falls below that which can be garnered from alternative uses of the invested resources (denoted as r) (Cuhna et al, 2006; Knudsen et al., 2006).

Second, early interventions lower the cost of later interventions needed to achieve particular educational or economic outcomes (Knudsen et al., 2006). Higher skilled students are more efficient learners and can thus produce more skill with the same level of input than students with lower levels of previously acquired skill can produce. For example, public expenditure on an individual's education is greater if he or she attains more schooling *or* if he or she progresses through schooling less efficiently by requiring extra resources (e.g., special education) or progressing through grades more slowly. ECE reduces the likelihood that a child will need special education services or repeat grades during school years. This results in lower costs to the educational system over time (Knudsen et al., 2006; Heckman et al., 2010). Thus, robust evidence indicates that the highest returns to a dollar of investment are accrued when the investment are made at young ages. Without complementary early childhood interventions, later remedial investments are less effective and can be prohibitively costly (Heckman and Masterov, 2007).

Finally, there is a complementarity between investments made early in life and those made later on in childhood and adolescence. Early childhood interventions resulting in higher levels of skills being formed in the early years, increase the returns to investments made during the schooling years and can be essential for achieving satisfactory adult outcomes. However, later investments are also necessary in order to harvest the fruits of those early investments. Thus, evidence does not suggest that investments should be made only in early childhood and not in the

schooling or post-schooling years. Indeed, later investments are required in order to keep the positive effects of those early investments from dissipating (Currie and Thomas, 2000; Heckman and Masterov, 2007). However, again, if early investments are made, then the returns to later investments will be higher, due to the self-reinforcing nature of early formed skills. Therefore, optimal investment strategies will emphasize greater investment in the early years relative to later years as they will yield the highest return on investment (Heckman and Masterov, 2007). Moreover, given that we see the higher returns from investing earlier in childhood for more disadvantaged children, early childhood investment also represents one of the few areas where there is no tradeoff between economic efficiency and equity (Cuhna et al, 2006)[28].

The high returns to investing in early childhood have been confirmed by a number of randomized control trials evaluating the provision of home visiting services and/or enriched preschool environments to disadvantaged children and families. Well known randomized trials have been conducted evaluating the Nurse Family Partnership (NFP) home visiting program in multiple locations throughout the country. Mother's participating in NFP programs had a lower incidence of pre-natal smoking and made better use of community services than their control group counter parts. The program exerted larger effects on more disadvantaged women. More disadvantaged women participating in the program demonstrated improved parenting skills, provided a higher quality home environment, had higher rates of employment, and fewer subsequent pregnancies (Cuhna et al, 2006). The children of NFP participants experienced lower rates of child abuse, fewer emergency room visits, and less time in the hospital. They also scored better on achievement tests, demonstrated increased positive behavior (lower rates of aggression or problem behaviors), had fewer incidences of running away, and fewer arrests (by more than half) by age 15 than the children of the control group (Karoly et al., 2005; Cuhna et al, 2006).

Some of the best data available on the importance of early childhood for skill formation comes from randomized trials providing enriched preschool environments to disadvantaged children. The most famous of these experiments come from the Perry Preschool Program and the Carolina Abecedarian Program (CAB). Both of these programs utilized random child assignment to the program and committed to long-term follow up with the children in order to study their long-term effects. Data from these programs demonstrate substantial positive effects of enriched early environments on a number of outcomes including educational outcomes, adult employment outcomes, and numerous social behaviors long after the intervention concluded (Barnett and Masse, 2007; Heckman and Masterov, 2007; Knudsen et al., 2006; Schweinhart, 2005). Participants of these programs were found to have received less special education, experienced reduced grade retention, were less likely to drop out of school, earned higher GPAs, were more likely to graduate from high school and attend college, and performed better on intellectual, language, and achievement tests then their control groups counter parts (Barnett and Masse, 2007; Schweinhart, 2005). They were also less likely to smoke or use drugs and later demonstrated higher levels of motivation and self-control (Cuhna et al, 2006). Perry Preschool participants were followed through age 40. As adults, these participants were more likely to be employed, had higher earnings, were less dependent on welfare, and were more likely to own a home. They experienced lower rates of teen pregnancy and higher rates of marriage. Program

[28] This pattern reverses in adolescence where the highest return is garnered from investing in high skilled (i.e., more advantaged) children. Thus, later life investments face an equity-efficiency tradeoff (Cuhna et al, 2006).

participants also experienced substantially lower rates of crime participation, both in terms of incidence and severity (Heckman and Masterov, 2007; Heckman et al., 2010). A number of the estimated effects of the Perry Preschool Program on a variety of outcomes are summarized in Figures 5 and 6.

While the improving child outcomes is an undeniable benefit of early childhood interventions, from an economic development perspective, it is also important to evaluate the extent that these programs are economically justified. It is important to understand if investing in these programs will generate sufficient savings in the future to justify their costs. In other words, what are the returns to a dollar invested in early childhood interventions in terms of future savings to the participant, the government, and society as a whole. Evidence from evaluations of early childhood interventions indicate that these returns are generally quite high, and these programs often pay for themselves in the long-run (Karoly et al., 2005; Cuhna et al, 2006). For many early childhood interventions, substantial long-run savings are realized from reduced expenditure on welfare and criminal justice alone. Karoly et al. (1998) estimates that the benefits of the NFP program in Elmira, NY was approximately 4 times its costs and paid for itself by the time the child was age 4. Cost benefit analyses on NFP programs estimate cost-benefit ratios of 2.88 by the time the child is 15 years old—meaning the return on a dollar invested in the program is $2.88 in present discounted value.[29] NFP participants were followed to age 15 so these cost-benefits represent returns accrued by adolescence. The longer participants are followed, the better researchers are able to estimate a program's long-term benefits. Benefit-to-cost ratios on other early childhood interventions with follow-up in early to late twenties are estimated to range from approximately 3 to almost 9 (Karoly et al., 2005).

The Perry Preschool Program is the only intervention in which participants and control groups were followed well into adulthood—to age 40. As a result, this program is one of the most widely investigated. Because of its long-term follow-up, the Perry program also provides the best estimates of the effects of ECE on adult outcomes and long-term returns on investment in this program. With an initial cost of approximately $17,759 per student (in 2006 dollars) (Heckman et al., 2010), a number of studies estimate the program's rate of return by accounting for its net benefits on education, earnings, use of the welfare system, reductions in crime[30], and taxes (both including the cost to taxpayers to fund the program as well as increased tax revenue due to the increased earnings of participants). Early estimates of the rate of return for the Perry Preschool Program were approximately 16-17% (Rolnick and Grunewald, 2003; Belfield et al., 2006). Heckman et al. (2010) provide the most conservative estimates of the program's rate of return to society, which is still high at approximately 7-10%. The range in estimates largely comes from how the costs of crime are evaluated as well as how much deadweight loss is assumed to accrue through funding the program through taxation. If the program is not funded through taxpayer dollars then there should be no deadweight loss, then rates of returns to society (including the participants as well as the general public) are closer to 10% (using Heckman et al. (2010) more

[29] Since a dollar tomorrow is less attractive than a dollar today, in cost-benefit analysis, future dollars are discounted. Discount rates in the intervention analyses typically range for 3—6% per year.

[30] The value of crime reduction is calculated as the reduction in direct costs (i.e., incarceration and the criminal justice system) in addition to the value of damage done to victims.

conservative estimates). Excluding the rate of return to individual participants, the rate of return to the general public alone was still high at around 8% (with no deadweight loss).

The Perry Preschool Program intervened rather late in early childhood as it targeted 3- to-4-year olds. In a recent study, Garcia et al. (2017) estimate an even higher rate of return for ECE programs targeting children from birth to age 5. The CAB program and the Carolina Approach to Responsive Education (CARE) intervened for disadvantaged children beginning at approximately 8 weeks of age to 5 years. Garica et al. (2017) analyze CAB/CARE benefits to children's future health, quality of life, crime participation, cognitive and educational outcomes in addition to increases in maternal labor income resulting from having subsidized childcare. They find a high internal rate of return at 13.7% per annum and a benefit-to-cost ratio of 7.3. These estimates account for deadweight loss if the programs are funded through taxation and would thus be higher if their funding comes from non-tax revenue. Garcia et al. (2017) further highlights the importance of high-quality care as 75% of the control group children were enrolled in alternative, lower quality childcare centers. Notably, estimates on the rate of return to both the Perry Preschool Program and the CAB/CARE projects exceed the current annual investment return target of 7% set by the NM SIC for the LGPF, and especially so for its average realized annual net-of fees investment return of 6.08% for the most recent decade.

Much of the evidence we have on randomized preschool trials come from interventions that targeted disadvantaged children. Therefore, it is unclear that their substantial estimated returns would hold for children from more advantaged home environments. Evidence from the NFP studies indicates that the returns are highest for disadvantaged, low-income populations. For example, the effects of NFP were larger for the higher-risk sample of mothers. The return to a dollar of investment in NFP for high-risk mothers was approximately $5.70, whereas this figure was $1.26 for low-risk mothers (Karoly et al., 2005). Consequently, some argue that ECE programs should be targeted rather than universal in order to reap the highest returns (Cuhna et al, 2006; Heckman, 2008).

Currently little evidence exists comparing the differential effects of targeted versus universal programs. However, a recent study does compare these effects and finds that low-income children enjoy a significantly higher benefit to short-term cognitive outcomes from attending universal rather than targeted programs. Universal preschool programs did not demonstrate similar benefits to high-income children (Cascio, 2017). This result is somewhat surprising as the examined universal and targeted programs looked largely similar in terms of measured standards. The study's author speculates on the reasons for the differential effect of universal versus targeted programs. First, universal programs may give access to a preschool education to low-income children who do not meet the targeting criteria of targeted programs. She also suggests that universal programs may offer a relatively higher quality learning experience to low-income preschoolers not reflected in the quality metrics generally targeted by policy makers. For example, she speculates that universal programs may be more academically oriented, set higher expectations, or receive more pressure from parents than targeted programs (Cascio, 2017). Regardless, whether higher returns will be realized from targeted or universal programs remains an open question.

In closing, the "Heckman equation" (Heckman, 2012) emphasizes the long-term societal and economic implications to ECE. It is stated as follows: invest, develop, sustain and produce gain:

> "Invest in developmental resources for at-risk children. Develop their cognitive and character skills from birth to age five, when it matters most. Sustain gains in early development with effective education through to adulthood. Gain more capable, productive and valuable citizens who pay dividends for generations to come."[31]

V. Trends in Early Childhood Education Expenditures in NM, and Unmet Needs

Ramping up ECE in New Mexico

The state dramatically increased funding for early childhood programs over the past several years, even as recent revenue shortfalls led to flat or declining spending in virtually all other areas (LFC Post-Session Reviews, 2014-2018). Total resources available for early childhood funding, excluding the federally funded Head Start and Early Head Start programs, doubled between FY2012 and FY2019, from $131.2 million to $266.9 million. Spending on Home Visiting and Pre-K, the early childhood programs with the best evidence base, increased fivefold over this period, from $16.8 million in FY2012 to $86.6 million in FY2019. (See Figures 7 and 8.)

Numbers of children served, especially in Home Visiting and Pre-K, also rose dramatically. The LFC estimates that over 5,000 children will receive home visiting services in FY2019, compared with fewer than 1,000 in FY2013. And over 11,000 will enroll in state-funded Pre-K, almost double the number in FY2013. (LFC Post-Session Reviews, 2014-2018.)

Our estimates for unmet need are "back of the envelope" calculations to assess whether a 1% increment in the LGPF distribution would make a significant contribution. They include only spending for home visiting and pre-K. They consider quality only cursorily. They do not consider other programs that might also have a high ROI for the state, including services designed to prevent child maltreatment. Our estimates should therefore be considered lower bounds of unmet need.

Unmet Need for Home Visiting Services: $27.9 million +

Kinney (2017) estimates that only 5% of families with children under the age of 3 receive home visiting services in New Mexico. By design, the state's program targets first born children and teen parents. With these targets, the LFC estimates that it is reaching about half of the eligible population (LFC, May 2018 Post-Session Review). Another question related to unmet need is whether funding levels are adequate to deliver high quality services. Kinney argues that a reasonable per child cost in 2017 was $4500, based on costs associated with St. Joseph's highly regarded program.

[31] https://heckmanequation.org/resource/invest-in-early-childhood-development-reduce-deficits-strengthen-the-economy/

Using the LFC's estimates of 5,381 children served in FY2019, an additional 5,419 children with unmet need, and St. Joseph's higher per child cost to ensure high quality services, we find that additional funding in the amount of $27.9 million is needed.[32]

Others have argued for offering home visiting for all births, rather than first births and births to teens. Targeted programs are more likely to carry stigma, and New Mexico's high poverty rates suggest widespread need. Our estimate should therefore be considered a lower bound of need.

Unmet Need for Pre-K: $58.6 million - $106.0 million

New Mexico currently ranks in the top third states or better for pre-K enrollment. In the 2016-2017 school year, 55% of 4-year-olds and 22% of 3-year-olds attended state-funded pre-K or federally funded Head Start in New Mexico, compared with average state enrollments of 33% and 5%. These figures put New Mexico at 15th out of all states for 4-year-old enrollment and 18th for 3-year-olds (Friedman-Krauss, 2018: New Mexico Profile).

We estimate that state-funded pre-K in New Mexico reached 40% of 3- and 4-year-olds in FY2019. Using Oklahoma's experience with its universal voluntary pre-K as a benchmark, we estimate that total demand for state-funded pre-K in New Mexico, were it to be offered universally, would rise gradually to a plateau of about 75% (Friedman-Krauss, 2018, Oklahoma Profile).

Expansion should also occur incrementally, so as not to outpace the capacity to ensure quality. If expansion were to be complete in 2025, and 75% of 3- and 4-year-olds were participating at current rates of half-day and full-day, we estimate the total additional cost at $58.6 million in current dollars—about double the FY2019 expenditure.[33] This estimate assumes that the state continues to offer a mix of ½ - day and full-day programming. If all students attended full-day pre-K, the additional cost would be $106.0 million.[34]

Evaluation to Assess Quality: $17 million +

The research is clear that in order to realize the hoped-for Return on Investments indicated in the previous section, programs must be of high quality. Evaluation to monitor quality must therefore be integrated into New Mexico's ECE system.

---

[32] ([5,419 X $4500 X 1.04 2017-2018 inflation factor] + [5,381 X ($4500 X 1.04 inflation factor - $4200 current per child cost)] =) $27.9 million.

[33] ([75%/40% increase in participation rate] X 2.2% increase in 3-4 year-old population between 2020 and 2025 X $64.0 million FY2019 spending =) $122.6 million total, an increase of ($122.6 million - $64 million =) $58.6 million.

[34] We applied the same calculation as in footnote 33, except that FY2019 would have been $88.7 million if all pre-K seats were full-day.

New Mexico's current pre-K program meets 9 out of 10 quality criteria promoted by the National Institute for Early Education Research (NIEER), a distinction earned by 15 states. Only 5 states met all 10 criteria. The quality measures include restricting class size to 20 students, a staff-to-student ration of 10-to-1, a high-quality curriculum, required specialized training in early childhood development, and 15 hours or more of professional staff development annually, all of which New Mexico met. The only measure missed was requiring that teachers hold a BA. (Friedman-Krauss, 2018.)

Nevertheless, the NIEER checklist does not address the quality of teacher-student interactions and competent curriculum delivery, which are critical to pre-K effectiveness (Yoshikawa et al., 2013). Classroom observations can determine these programmatic aspects (Gormley et al., 2018), and should be part of the state's quality assurance program. The same is true for home visiting programs.

Many federal grants require a 10% set-aside for evaluation. We estimate total spending on home visiting and pre-K at $173 million ($86.6 million current expenditure + $86.5 million to meet need). A robust evaluation program would therefore cost an additional $17 million.

Would a 1% Distribution from the LGPF Accommodate Unmet Need for Home Visiting Services and Pre-K?

In a word, yes, it would. Our lower conservative estimates of annual unmet needs fall between $104 and $151 million.[35] Using the 2019 distributions to all LGPF beneficiaries of $747.14 million (5% of the preceding five-year market value of the fund) as the reference point (LFC 2018b), then a 1% increment in the LGPF distribution would provide about $163.63 million in annual funding. More conservatively, a 1% increment in distribution restricted to the Common Schools portion of the LGPF would provide about $132.5 million (beginning in FY 2020).[36] The latter ($132.5 million) nearly covers our estimates for providing full-day pre-K to 3- and 4-year-olds. The former ($163.63 million) would be enough to extend the reach of home visiting beyond the currently targeted population, and to invest in programs to prevent child maltreatment.

---

[35] Our estimate of unmet need for home visiting exceeds the LFC's estimate by $5.1 million and falls below Kinney's (2017) estimate by $22.6 million. Our lower bound estimate for unmet need for pre-K exceeds the LFC's estimate by $38 million, and our higher bound estimate falls below Kinney's by $152 million. We reached our totals as follows: $27.9 million additional funds for home visiting + $58.6 to $106 million additional funds for pre-K + $17 million additional funds for evaluation = $104 million to $151 million.

[36] For the LGPF in 2018, the percent of surface acreage estate dedicated to the Common Schools was 76%, and the percent of mineral acreage estate dedicated to the Common Schools was 77% (see Appendix A). However, different lands may perform differentially in generating revenues for their dedicated beneficiaries, and in 2018, the percent of LGPF distributions to the Common Schools was 85.1%. Taking the approximate midpoint of the range between 77% ($126 million) to 85% ($139 million), gives an estimate of $132.5 million. This estimate will change with any future change in base SLO distributions. For example, the same calculated value would be $112 million with the FY 2018 SLO distribution of $689.2 million. Kinney (2017) provides a similar estimate of $112 million for a 1% increment in the distribution, restricted to the Common Schools component of the LGPF.

VI. Conclusions

We initially motivated this analysis and review in broader, provocative terms: consideration of the *Great Transition Challenge* facing the state of New Mexico, and how to invest the scarcity rents from a significant boom in oil and gas production. From a sustainable development perspective, it is important to avoid the lure of directing public revenues heavily towards current consumption, and instead invest some significant slice of these scarcity rents into capital assets capable of generating net benefit streams in the future. But in the chain of obligation to the further future, a relevant policy question is the type of structure we want to impose on the bequest package we hand over to the generation that comes after us. Extensive public discussion, debates, analyses, and reporting over the package of investments we might make to eventually replace the finite public revenues stream from fossil fuel extraction (e.g., in state endowment funds, or renewable energy, or early childhood education) are a testament to the people of the state, various analysts and journalists, and the far-sightedness of elected leaders. It is critical that a state holds such value-based discussions about sustainable development. This is especially the case in what we see as the high-quality public discourse over protecting state endowment funds versus diverting an increased distribution towards investment in early childhood education (ECE). Both options represent investments in the future of the state, each with their own risk/return considerations.

In particular, there has been considerable public debate over the last decade concerning a variety of proposals to use the Land Grant Permanent Fund (LGPF) to finance increased investments in ECE. For the most recent decade (as of June 30, 2018), the 10-year average annual net-of fees investment earnings for the LGPF was 6.08% (RV Kuhn, 2018). This can vary greatly depending on the time frame chosen, but these are impressive returns, as managed by the SIC. However, in comparison, a body of economic research has documented ROI's at the 7% -10% and above annual rate for investments in high quality ECE. If the goal is enhancing sustainable development for the state overall, and not maximizing the size of the fund, then there is a strong economic case to be made for supporting increased ECE investments in NM. Investments in ECE tend to outperform all other public investments in education. Further, from an equity perspective, ECE is a widely-recognized policy instrument for broadly distributing economic opportunity (Bernanke, 2007). Faced with a boom in oil and gas production and the finite public revenues that go with it, if New Mexico is to ever turn around persistent poverty measures, then ECE may also be an important economic *catalyst* for such a Great Transition, as a particular targeted investment.

As New Mexico is often at the wrong end of childhood development lists, it is important to understand the potential returns to ECE investments. The case for ECE as a particular form of human capital investment is supported by a compelling body of research demonstrating a wide variety of positive outcomes that persist over multiple decades, with significant public finance implications. Investments in ECE improve later education outcomes (leveraging other public investments), and employment outcomes (improving future tax revenue generation), as well as improving health outcomes and reducing crime (reducing future tax needs).

To be clear, over the last half decade, there *has* been significantly increased state and federal expenditures on ECE in NM. While critically important, and necessary for building capacity and developing programs, there still exists significant unmet need for ECE in NM (although the magnitude of this unmet need varies greatly depending upon assumptions). From our review, a conservative, lower bound estimate of unmet needs for ECE in NM is about $104 million annually, which includes only targeted home visits and fully offers pre-K to both 3- and 4-year olds; if this would be further expanded to also include *full day* pre-K for 3- and 4-year olds, then the estimate is $151 million annually.

Most basically, we support increased public expenditures for further expansion of ECE services in New Mexico. Home Visiting and pre-K are elements of ECE with the best evidence base, and New Mexico's current pre-K program meets 9 out of 10 NIEER quality criteria. Expansion of these recurring services might be funded out of current appropriations, or some mix with a smaller increment in distributions from the LGPF (e.g., 0.5% or less). With potentially limited support for tax increases, and the recent Singleton judicial decision in 2018 (McKay and Boyd, 2019) requiring increased public funding support for K-12 education in NM (while also recognizing ECE needs), there may be limited possibilities to finance significantly increased investments in ECE out of current appropriations.

Thus, after careful review, we support legislative proposals for an increase of no more than 1% in the distribution rate from LGPF, in order to support increased investments in ECE. If restricted to the Common Schools component of the LGPF beneficiaries, then a 1% increment would equate to an impact in the 0.77% to 0.85% range. At a full 1% increment, the estimated increase in the distribution would provide approximately $163.63 million annually, based on expected 2019 distributions from the LGPF. If the 1% increment is restricted to the Common Schools component, then it would provide approximately $132.5 million annually. The latter would cover a conservative, lower bound estimate of unmet ECE needs, with some margin for quality improvements in existing programs. If pursued, then to help optimize these investments we encourage phased-in implementation, with efficient state oversight and administration, a minimum floor on protecting the corpus of the fund, and a significant focus on assessment and outcomes evaluation.

References

Advantage Business Consulting. 2014. Analysis of Transferring Resources from New Mexico's Land Grant Permanent Fund to Early Childhood Education. Final Report Submitted to St. Joseph Community Health. URL: http://www.investinkidsnow.org/uploads/files/LGPF-Report-NM-Jan-23-14.pdf

Albuquerque Journal Editorial Board. 2018. Ready for Lift-off? NM's Newest Leaders Need to Keep Their Feet on the Ground as Demands for Funding, Change Rise. *Albuquerque Journal*, December 30, 2018. URL: https://www.abqjournal.com/1262563/ready-for-liftoff-2.html

Alderman, H., J. Hoddinott, and B. Kinsey, 2006. Long-term Consequences of Early Childhood Malnutrition. *Oxford Economic Papers*, 58: 450-474.

Almond, D., and J. Currie, 2011. Human Capital before Age Five. In O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics.* North Hollad, Amersterdam/London: Elsevier.

Ann E. Casey Foundation. 2018. KIDS COUNT State Rankings. URL: https://datacenter.kidscount.org/rankings

Ayers, R., J. van den Bergh, and J. Gowdy. 1998. Viewpoint: Weak versus Strong Sustainability. Center for the Management of Environmental Resources, INSEAD. URL: http://dare.ubvu.vu.nl/bitstream/handle/1871/9295/98103.pdf?sequence=1

Ballotopedia, 2018. New Mexico Land Grant Permanent Funds Distribution to Early Childhood Education Amendment (2018). Ballotopedia. URL: https://ballotpedia.org/New_Mexico_Land_Grant_Permanent_Fund_Distribution_to_Early_Childhood_Education_Amendment_(2018)

Barker, D., 1998. *Mothers, Babies and Health in Later Life.* Edinburg; New York: Churchill Livingstone.

Barnett, W., and L. Masse, 2007. Comparative Benefit-Cost Analysis of the Abecedarian Program and its Policy Implications. *Economics of Education Review.* 26: 113-125.

Bartik, Timothy J. 2011. *Investing in Kids: Early Childhood Programs and Local Economic Development*. Kalamazoo, Mich: W.E. Upjohn Institute.

Belfield, C.R., M. Norres, W.S. Barnett, L. Schweinhart, 2006. The High/Scope Perry Preschool Program: Cost-Benefit Analysis using Data from the Age-40 Followup. *Journal of Human Resources,* 41(1): 162-190.

Bernanke, B.S., 2007. "The Level and Distribution of Economic Well-Being," Remarks before the Greater Omaha Chamber of Commerce, Omaha, Nebraska, February 6, 2007, URL:https://www.federalreserve.gov/newsevents/speech/bernanke20070206a.htm

Berrens, R., 2001. The Safe Minimum Standard of Conservation and Endangered Species: A Review. *Environmental Conservation*, 28(2):1-12.

Blau, D. and Currie, J., 2006. Daycare and Afterschool Care: Who's Minding the Kids? In E. Hanushek and F. Welch (eds.), *Handbook of the Economics of Education.* Amsterdam, North-Holland: Elsevier.

Boettner, T., J. Kriesky, R. McIlmoil, and E. Palhaus. 2012. Creating an Economic Diversification Trust Fund. West Virginia Center on Budget and Policy. URL: http://www.downstreamstrategies.com/documents/reports_publication/ds_economic_diversification_trust_fund.pdf

Boyd, D., 2018. SIC Approves $5.65 million "Pay to Play" Settlement. *Albuquerque Journal*, November 27, 2018. URL: https://www.abqjournal.com/1251167/sic-approves-565-million-paytoplay-settlement.html

Brekke, K.A., 1997. Economic Growth and the Environment: On the Measurement of Income and Welfare. Edward Elgar, Cheltenham.

Bromley, D., 1998. Searching for Sustainability: The Poverty of Spontaneous Order. *Ecological Economics* 24: 231-240.

Bryl, L. 2018. Human Capital Orientation and Financial Performance: A Comparative Analysis of US Corporations. *Journal of Entrepreneurship, Management and Innovation* 14(3):61-86.

Cameron, S., and Heckman, J., 1999. Should College Attendance be Further Subsidized to Reduce Rising Wage Inequality?" in M. Koster (ed.), *Financing College Tuition: Government Policies and Educational Priorities,* Washington, D.C.:AEI, 1999.

Cameron, S., and J. Heckman, 2001. The Dynamics of Educational Attainment for Black, Hispanic, and White Males. *Journal of Political Economy*, 109(3): 255-499.

Carnerio, P. and Heckman, J., 2002. The Evidence on Credit Constraints in Post-Secondary Schooling. *Economic Journal.* 112: 705-734.

Carnerio, P. and Heckman, J., 2003. Human Capital Policy, in J. Heckman and A. Krueger (eds.) *Inequality in America: What Role for Human Capital Policy.* Cambridge, MA: MIT Press.

Cascio, E., 2017. Does Universal Preschool Hit the Target? Program Access and Preschool Impacts. *NBER Working Paper*: 23215.

Congressional Budget Office (CBO), 2018. The Budget and Economic Outlook, 2018-2028. Congressional Budget Office, U.S. Congress. URL: https://www.cbo.gov/system/files?file=115th-congress-2017-2018/reports/53651-outlook.pdf

Cunha, F., J. Heckman, L. Lochner, and D. Masterov, 2006. Interpreting the Evidence on Life Cycle Skill Formation. In E. Hanushek and F. Welch (eds.), *Handbook of the Economics of Education.* Amsterdam, North-Holland: Elsevier.

Curley, J.P., C. L.. Jensen, R. Mashoodh, and F. A. Champagne, 2011. Social Influences on Neurobiology and Behavior: Epigenetic Effects During Development. *Psychoneuroendocrinology.* 36(3):352-371.

Currie, J. and D. Thomas, 2000. School Quality and the Longer-Term Effects of Head Start. *Journal of Human Resource,* 35(4): 775-774.

Danemann, M., 2018. What You Didn't Want to Know about the Land Grant Permanent Fund. *Los Alamos Monitor,* April 18, 2018. URL: dhttps://www.lamonitor.com/content/what-you-didn't-want-know-about-land-grant-permanent-fun

Dawson, G., S. Ashman, and L. Carver, 2000. The Role of Early Experience in Shaping Behavioral and Brain Development and Its Implications for Social Policy. *Development and Psychopathology.* 12(4): 695-712.

Doyle, A. 2018. As Wealth Fund Goes Green, Norway's Firms Struggle to Keep Up. Thompson-Reuters, Corporate Governance. March 4, 2018. URL: https://blogs.thomsonreuters.com/sustainability/2018/03/04/wealth-fund-goes-green-norways-firms-struggle-keep/

Friedman-Krauss, A. H., Barnett, W. S., Weisenfeld, G. G., Kasmin, R., DiCrecchio, N., & Horowitz, M., 2018. *The State of Preschool 2017: State Preschool Yearbook.* New Brunswick, NJ: National Institute for Early Education Research. URL: http://nieer.org/state-preschool-yearbooks/yearbook2017#profiles

Garcia, J.L., J. Heckman, D. Leaf, M. Prados, 2017. "Quantifying the Life-Cycle Benefits of a Prototypical Early Childhood Program".

Garcia, V., 2015. New Mexico Education 2050. In: F. Harris (Ed.) *New Mexico 2050*. University of New Mexico Press.

Gormley, William, Deborah Phillips and Sara Anderson. 2018. "The Effects of Tulsa's Pre-K Program on Middle School Student Performance." *Journal of Policy Analysis and Management 37*(1): 63-87. URL: https://doi.org/10.1002/pam22023

Grantham-McGregor, S., Y. B. Cheung, S. Cueto, P. Glewwe, L. Richter, and B. Strupp, 2007. Developmental Potential in the First 5 Years for Children in Developing Countries. *Lancet*, 369: 60-70.

Grunewald, R. and A. Solnick, 2010. An Early Childhood Investment with a High Public Return. *The Regional Economist*, URL: https://www.stlouisfed.org/~/media/files/pdfs/publications/pub_assets/pdf/re/2010/c/childhood_education.pdf

Harris, F. (Ed.), 2016. *New Mexico 2050*. University of New Mexico Press, Albuquerque, NM.

Heckman, J., 2007. The Economics, Technology and Neuroscience of Human Capability Formation. *Proceedings of the National Academy of Sciences.* 104(33): 13250-13255.

Heckman, J., 2008. Schools, Skills and Synapses. *Economic Inquiry*, 46(3): 289-324.

Heckman, J., 2012. Invest in Early Childhood Development: Reduce Deficits, Strengthen the Economy. URL: https://heckmanequation.org/resource/invest-in-early-childhood-development-reduce-deficits-strengthen-the-economy/

Heckman, James J.; Grunewald, Rob; and Reynolds, Arthur J., 2006. The Dollars and Cents of Investing Early: Cost-Benefit Analysis in Early Care and Education. *Zero to Three*, 26(6):10–17.

Heckman, J., and D.V. Masterov, 2007. The Productivity Argument for Investing in Young Children. *Review of Agricultural Economics,* 29(3): 446-493.

Heckman, James J.; Moon, Seong Hyeok; Pinto, Rodrigo; Savelyez, Peter; Yavitz, Adam. 2010. The Rate of Return to the HighScope Perry Pre-school Program. *Journal of Public Economics*, 94 (1-2):114-28.

Heckman, J., J. Stixrud, and S. Urzua, 2006. The Effects of Cognitive and Noncognitive Abilities on Labor Market Outcomes and Social Behavior. *Journal of Labor Economics.* 24(3): 411-482.

James, A. and D. Aadland. 2011. The Curse of Natural Resources: An Empirical Investigation of US Counties. *Land Economics*, 33(2):440-453.

Kapoor, S., and L. Zeilina. 2017 The Promise of Sustainable Investing – The Case of the Norwegian Oil Fund. URL: http://www.afrika.no/assets/documents/SCF-Oil-Fund-Report-print-v3-1.pdf

Karoly, L.A., P.W. Greenwork, S. Everingham, J. Hoube, M.R. Kilborn, C.P. Rydell, M. Sanders, and J. Chiesa,1998. Investing in Our Children: What we Know and Don't Know about the Costs and Benefits of Early Childhood Interventions. RAND, Santa Monica, CA.

Karoly, L.A., M. R. Kilborn, and J.S. Cannon, 2005. Early Childhood Interventions: Proven Results, Future Promis. Santa Monica, CA: RAND Corporation.

Kinney, C., 2017. Unmet Need for Early Childhood Education in New Mexico. CHI St. Joseph's Hospital. URL:

http://www.investinkidsnow.org/uploads/FileLinks/83c4a41271a948a0ad92470914f60518/StJo_White_Paper_R4.pdf

Knudsen, E., J. Heckman, J. Cameron, and J. Shonkoff, 2006. Economic, Neurobiological, and Behavioral Perspectives on Building America's Future Workforce. *Proceedings of the National Academy of Sciences*. 103(27): 10155-10162.

Legislative Education Study Committee (LESC), 2013. Bill Analysis, NM State Legislature, HJR 10a. March 6, 2013. URL: https://www.nmlegis.gov/Sessions/13%20regular/LESCAnalysis/HJR10.PDF

Legislative Finance Committee (LFC), 2018a. Agency Bill Analysis, NM State Legislature, HJR3, Jan 15, 2018. URL: https://www.nmdas.com/BillAnalysis/2018/HJR3-264%20Jan%2015.pdf

Legislative Finance Committee (LFC), 2018b. Fiscal Impact Report, NM State Legislature, HJR1, February 10, 2018. URL: https://www.nmlegis.gov/Sessions/18%20Regular/firs/HJR01.PDF

Legislative Finance Committee (LFC), 2018c. 2018 Post Session Review. State of New Mexico, Report of the Legislative Finance Committee to the Fifty-Third Legislature. May 2018. URL: https://www.nmlegis.gov/Entity/LFC/Documents/Session_Publications/Post_Session_Fiscal_Reviews/May%202018.pdf

Legislative Finance Committee (LFC), 2014-2018. Post-Session Reviews, April 2014, May 2015, March 2016, May 2017, May 2018. URL: https://www.nmlegis.gov/Entity/LFC/Session_Publications.

Lujan Grisham, M., 2018. Inaugural Speech. (as New Mexico Governor). January 1, 2019. URL: https://www.scribd.com/document/396628418/MLG-Inaug-Speech

Marshall, P., and J. W. Kenney, 2009. Biological Perspectives on the Effects of Early Psychosocial Experience. *Development Review.* 29(2): 96-119.

McKay, D., 2018. A New Idea for Permanent Fund. *Albuquerque Journal*, June 7, 2018. URL: https://www.abqjournal.com/1182510/a-new-idea-for-permanent-fund.html

McKay, D., and D. Boyd. 2019. Education Lawsuit Findings Revealed. *Albuquerque Journal*, January 8, 2019. URL: https://www.abqjournal.com/1266072/education-lawsuit-findings-revealed-excerot-judge-releases-files-backing-decision-on-school-funding.html

Meany, M., 2001. Maternal Care, Gene Expression, and the Transmission of Individual Differences in Stress Reactivity across Generations. *Annual Review of Neuroscience.* 24(1): 11161-11192.

Morris, A., 2016. The Challenge of State Reliance on Revenue from Fossil Fuel Production. Climate and Energy Economics Discussion Paper. The Brookings Institution. URL: https://www.brookings.edu/wp-content/uploads/2016/08/state-fiscal-implications-of-fossil-fuel-production-0809216-morris.pdf

Nathan, F., and K. Fisher. 2015. The Story of the Christmas Tree Bill: Fixing Public Infrastructure Spending in New Mexico. URL: http://www.thinknewmexico.org/wp-content/uploads/pdfs/CapitalOutlayReportWeb.pdf

New Mexico Energy Minerals and Natural Resources Department (NM EMNRD), 2018. Seizing Our Potential: Creating a More Diverse Economy in New Mexico. New Mexico Energy Policy and Implementation Plan. URL: http://www.emnrd.state.nm.us/EnergyPolicy/documents/EMNRD_EnergyPolicy.pdf

New Mexico Legislature, 2018. "House Joint Resolution 1," 53rd Legislature, State of New Mexico. URL: https://www.nmlegis.gov/Sessions/18%20Regular/resolutions/house/HJR01.pdf

New Mexico State Lands Office, 2018. New Mexico State Lands Office 2018 Annual Report. URL: http://www.nmstatelands.org/uploads/files/Communication/201%20Annual%20Report%20PDF.pdf

New Mexico State Investment Council (NM SIC), 2018. 60 Years Anniversary Report 2018. New Mexico State Investment Council. URL: http://www.sic.state.nm.us/uploads/FileLinks/5344f5ea807f40d7a58c0498891a649a/NMSIC_60thAnniversaryReport_2018.pdf

New Mexico Tax and Revenue Institute (NMTRI). 2015. The Fiscal Impacts of Oil and Gas Production in New Mexico: 2014 Fiscal Year End. New Mexico Tax and Revenue Institute. URL: https://c.ymcdn.com/sites/nmtri.site-ym.com/resource/resmgr/Studies_and_Reports/2014_NMTRI_Oil_and_Gas_Study.pdf

New Mexico Voices for Children. 2010. *New Mexico's Land Grant Permanent Fund: A Primer.* (Nov. 2010; 3 pages; pdf) URL: https://www.nmvoices.org/fpp_attachments/lgpf-primer-12-3-10.pdf

Nilsen, H. R., 2010. From Weak to Strong Sustainable Development: An Analysis of Norwegian Economic Policy Tools in Mitigating Climate Change (Doctoral thesis). Bodø Graduate School of Business. URL: https://brage.bibsys.no/xmlui/handle/11250/140368

Nott, R., 2018. Lujan Grisham Wants Land Grant to Fund Early Childhood Education. *Santa Fe New Mexican*. April 13, 2018. URL: http://www.santafenewmexican.com/news/education/lujan-grisham-wants-land-grant-to-fund-early-childhood-education/article_0df74c49-8b38-5ee9-925c-110a34f01f3c.html

Oxford, A., 2018a. Changes on the Fourth Floor: New Leader, New Challenges. *Santa Fe New Mexican*, November 17, 2018. URL: http://www.santafenewmexican.com/news/local_news/changes-on-the-fourth-floor-new-leader-new-challenges/article_6c747f13-df5f-5f46-b988-14287ed28fca.html

Oxford, A., 2018b. Proposed Amendment to Tap Land Grant Endowment for Early Childhood Ed Passes House. *Santa Fe New Mexican*, February 6, 2018. URL: http://www.santafenewmexican.com/news/education/proposed-amendment-to-tap-land-grant-endowment-for-early-ed/article_1b8ff23a-6698-5111-b40b-d1b3b978ccee.html

Pew Charitable Trusts (PEW), 2016. From Volatile Severance Taxes to Sustained Revenue: Key Recommendations to Improve State Sovereign Wealth Funds. URL: https://www.pewtrusts.org/-/media/assets/2016/10/fromvolatileseverancetaxestosustainedrevenue.pdf

Rabe, B., and R. Hampton, 2016. Trusting in the Future: The Re-emergence of State Trust Funds in the Shale Era, *Energy Research & Social Science*, 20(117).

Raimi, D., and R. Newell. 2016. US State and Local Oil and Gas Revenues. Resources for the Future Discussion Paper, 16-50. RFF, Washington DC. URL: http://www.rff.org/files/document/file/RFF-DP-16-50.pdf

Reynolds, Arthur J.; Temple, Judy A.; Robertson, Dylan L.; and Mann, Emily A., 2002. "Age 21 Cost-Benefit Analysis of the Title I Chicago Child-Parent Centers." *Educational Evaluation and Policy Analysis*, 4(24): 267–303.

Robinson-Avila, K., 2018. Formation in NM, Texas Called Largest Oil Reserve in US. *Albuquerque Journal*, December 6, 2018. https://www.abqjournal.com/1254493/usgs-permian-oil-gas-reserves-largest-ever-found-in-u-s.html?utm_term=Autofeed&utm_medium=Social&utm_source=Twitter#Echobox=1544135895

Rolnick, A., and R. Grunewald, 2003. Early Childhood Development: Economic Development with a High Public Return. Tech. Rep. Federal Reserve Bank of Minneapolis, Minneapolis, MN.

Rolnick, A., and R. Grunewald. 2008. Early Education's Big Dividends: The Better Public Investment. Federal Reserve Bank of Boston. URL: www.bos.frb.org/commdev/c&b/index.htm

RV Kuhn, 2018. Quarterly Performance Report: Executive Summary Performance Review for New Mexico State Investment Council. June 30, 2018. URL: http://www.sic.state.nm.us/uploads/FileLinks/23226fbdac1643e2ad09155af16b6e45/3.a.2_2018_06_30_NMSIC_Executive_Summary__Updated___FINAL_.pdf

Saha, D., and M. Muro. 2016. Permanent Trust Funds: Funding Economic Change with Fracking Revenues. Brookings Metropolitan Policy Program

Schardin Clarke, S. 2013. Severance Tax Bonding Program and Severance Tax Permanent Fund. Presentation to the Revenue Stabilization and Tax Policy Committee, August 19, 2013.

URL:
https://www.nmlegis.gov/handouts/RSTP%20081913%20Item%204%20Severance%20Tax%20Bonding%20Program%20and%20Severance%20Tax%20Permanent%20Fund.pdf

Schardin Clarke, S. 2015. Severance Tax Bonding Program: Overview and Recent Changes. Presentation to the Legislative Finance Committee, July 16, 2015. URL: https://nmlegis.gov/handouts/ALFC%20071515%20Item%208%20Severance%20Tax%20Bonding%20Program%20Overview%20and%20Recent%20Changes.pdf

Schweinhart, L., 2005. The High/Scope Perry Preschool Study through Age 40: Summary, Conclusions, and Frequently Asked Questions. *High/Scope Educational Research Foundation*.

Sjafjell, B., 2017. Norway's Gold Standard is a Tarnished Gold Standard for Sustainable Investing. The Conversation. URL: https://theconversation.com/norways-oil-fund-is-a-tarnished-gold-standard-for-sustainable-investment-75741

Solow, R., 1991. Sustainability: An Economist's Perspective. URL: http://cda.mrs.umn.edu/~kildegac/Courses/Enviro/3008/Readings/Solow.pdf

Solow, R. 1992. An Almost Practical Step Towards Sustainability. Resources for the Future.

Slaus, I, and G. Jacobs. 2011. Human Capital and Sustainability. *Sustainability* 3:97-154.

Talk Poverty. 2018. New Mexico Report 2018. URL: https://talkpoverty.org/state-year-report/new-mexico-2018-report/

U.S. Census Bureau, 2008-2012 American Community Survey 5-Year Estimates. URL: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates. URL: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

U.S. Energy Information Administration, 2018. State Profiles and Energy Estimates. URL: https://www.eia.gov/state/search/#?3=25&a=true

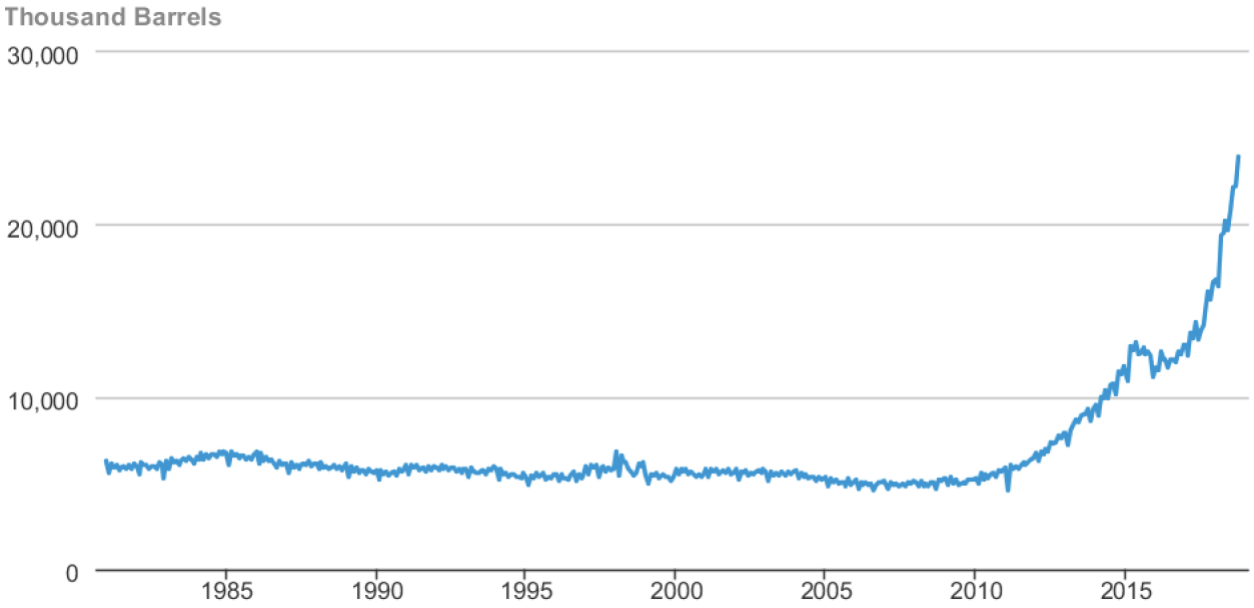
U.S. Geological Survey, 2018. "Assessment of Undiscovered Continuous Oil and Gas Resources in the Wolfcamp Shale and Bone Spring Formation of the Delaware Basin, Permian Basin Province, New Mexico and Texas, 2018," URL: https://pubs.usgs.gov/fs/2018/3073/fs20183073.pdf

Venables, A., 2016. Using Natural Resources for Development: Why Has This Proven So Difficult? *Journal of Economic Perspectives* 30(1):161-184.

Williams, A., 2008. New Mexico's Land Grant and Severance Tax Permanent Funds: Renewable Wealth from Non-Renewable Resources. *Natural Resources Journal* 48(3):719-743.

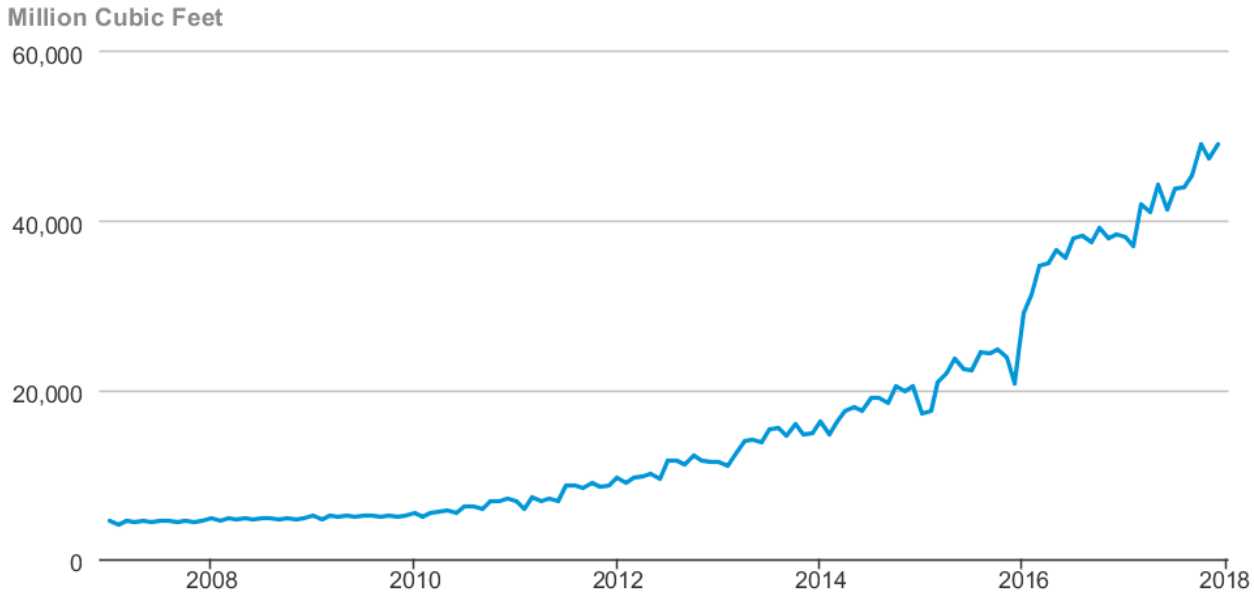
Yoshikawa, H., Weiland, C., Brooks-Gunn, J., Burchinal, M., Espinosa, L. M., Gormley, W. T. Zaslow, M., 2013. *Investing in our future: The evidence base on preschool education.* Ann Arbor, MI: Society for Research in Child Development. URL: https://www.fcd-us.org/the-evidence-base-on-preschool/

Figure 1: New Mexico Field Production of Crude Oil, Monthly



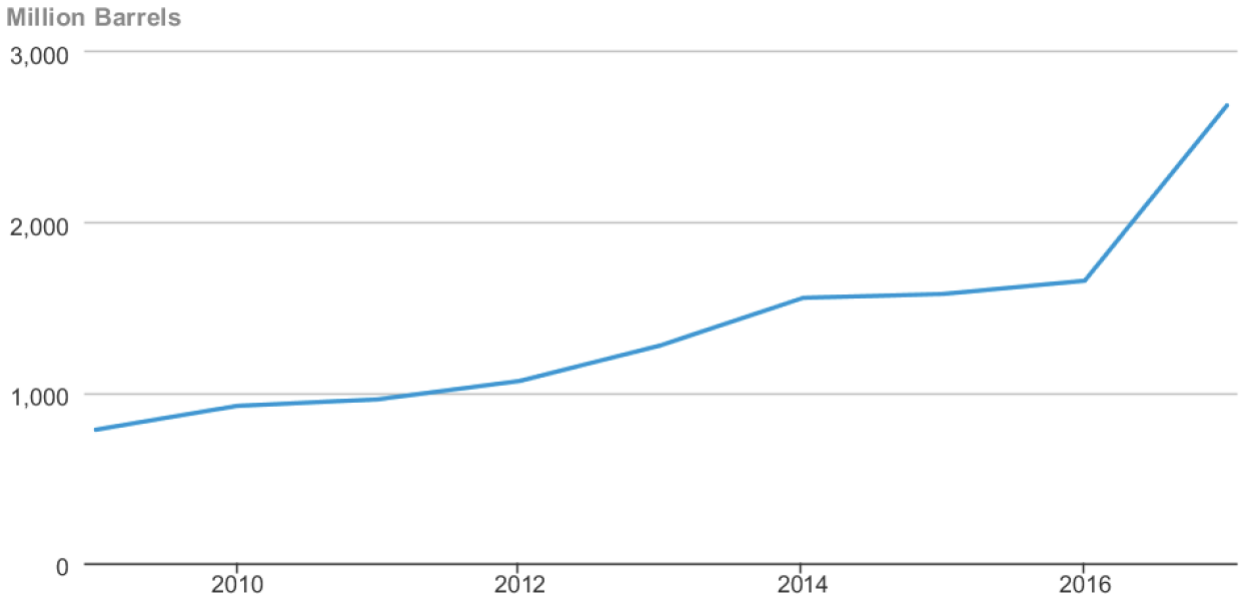
Source: U.S. Energy Administration (through September 2018, with December 31, 2018 release).
URL: https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRFPNM1&f=M

Figure 2: New Mexico Natural Gas Gross Withdrawals from Shale Gas, Monthly



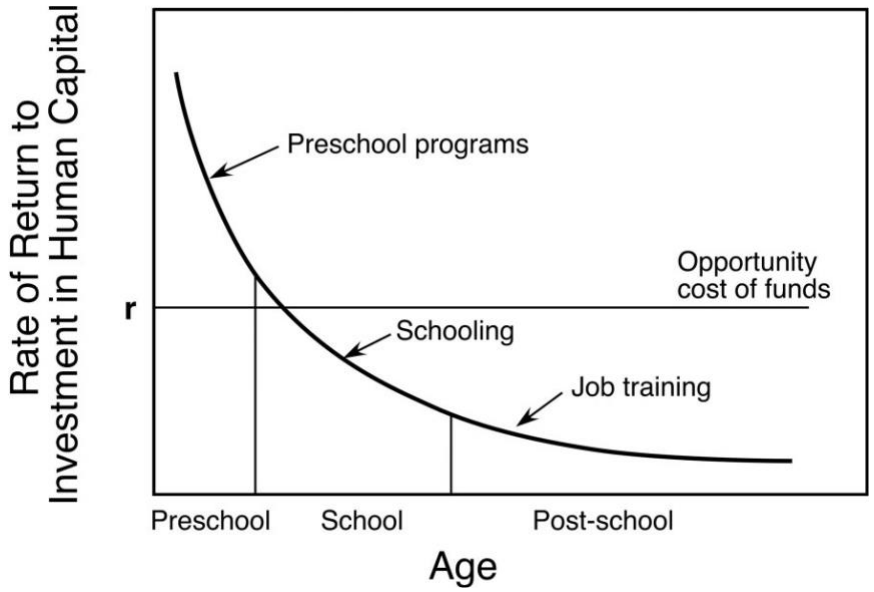
Source: U.S., Energy Information Administration (December 31, 2018 release date).
URL: https://www.eia.gov/dnav/ng/hist/ngm_epg0_fgs_snm_mmcfM.htm

Figure 3: New Mexico Crude Oil + Lease Condensate, Proved Reserves



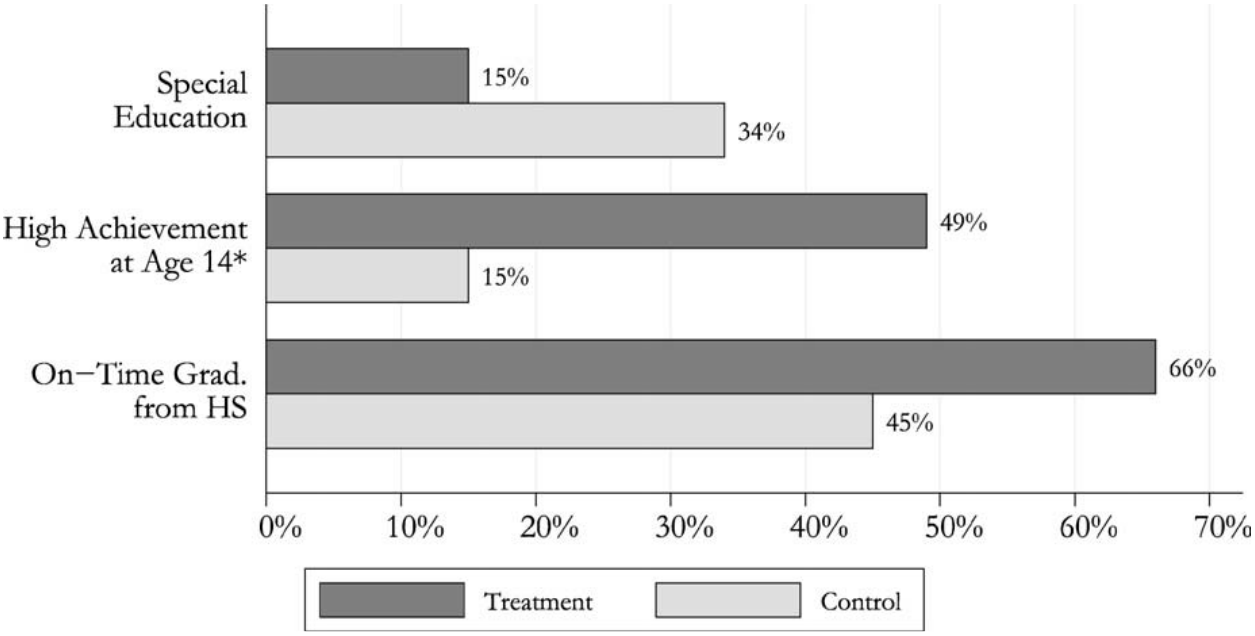
Source: U.S. Energy Information Administration (November 28, 2018 release). URL: https://www.eia.gov/dnav/ng/hist/res_epccond_r01_snm_mmbbla.htm

Figure 4: Rate of Return to Investment in Human Capital, by Age



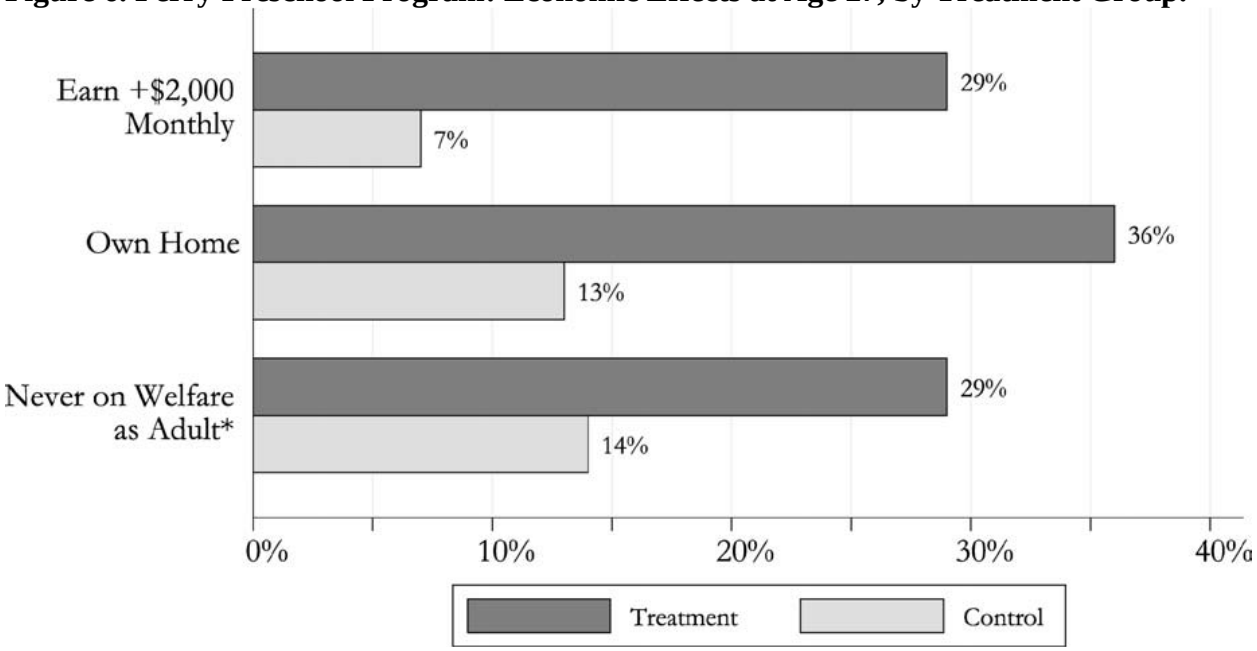
Source: Knudsen et al. (2006).

Figure 5: Perry Preschool Program: Educational Effects, by Treatment Group.



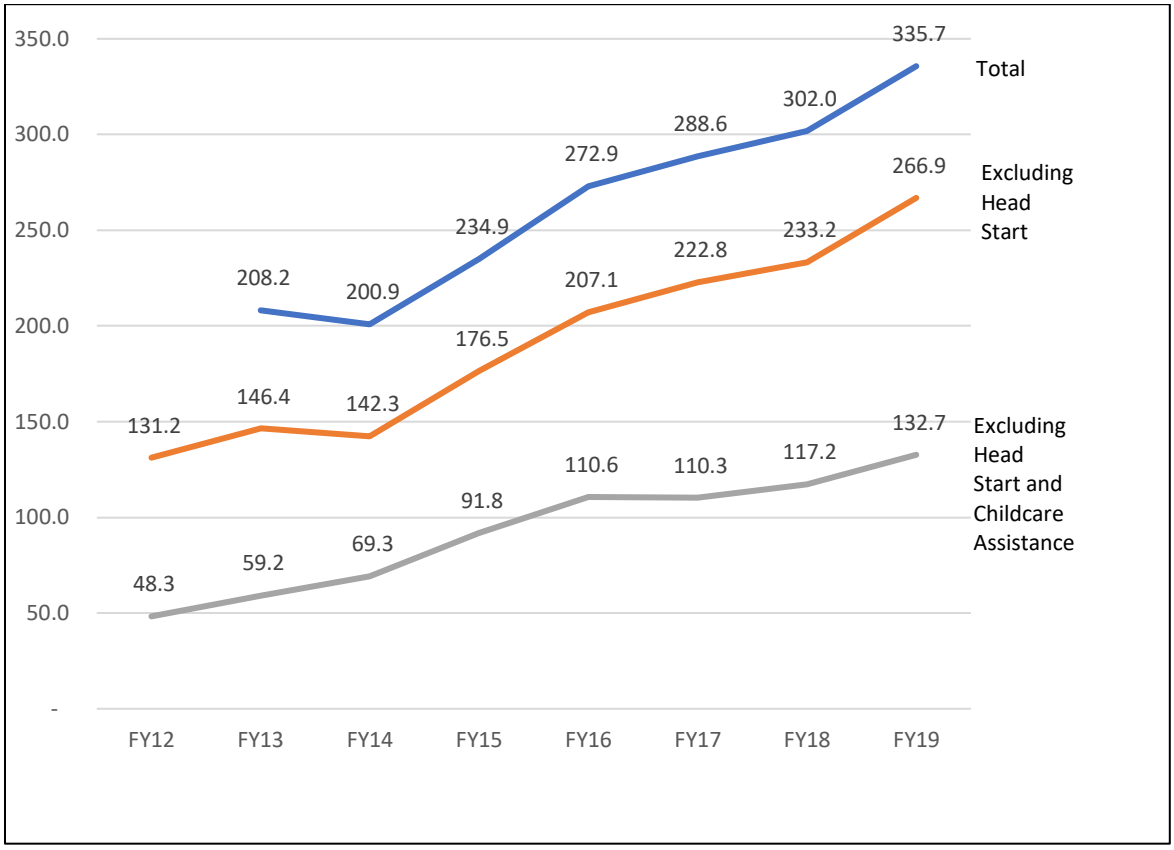
Source: Cuhna et al. (2006).
*High achievement defined as performance at or above the lowest 10th percentile on the California Achievement Test (1970).

Figure 6. Perry Preschool Program: Economic Effects at Age 27, by Treatment Group.



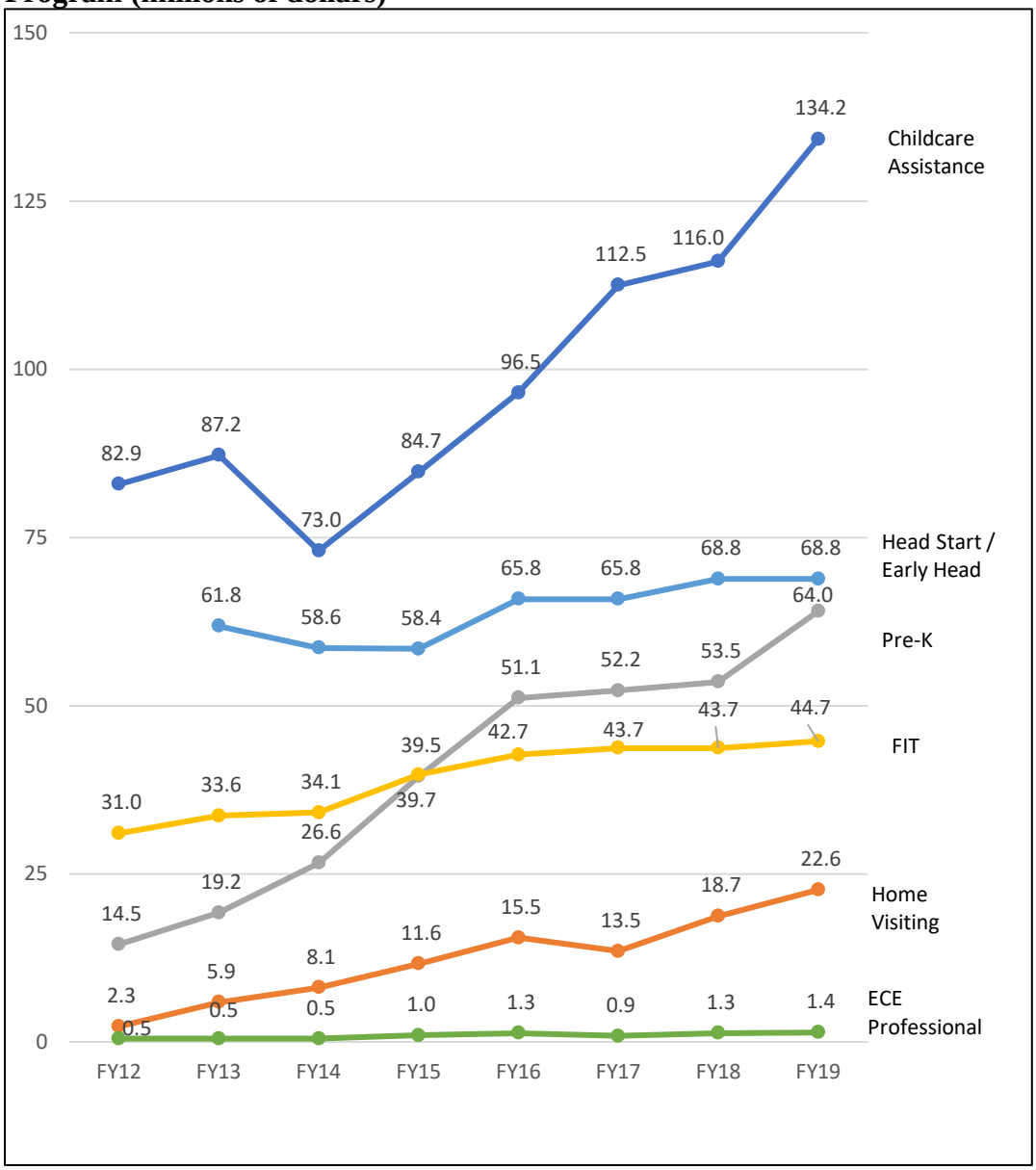
Source: Cunha et al. (2006).
*Updated through age 40 using recent Perry Preschool Program data, derived from self-report and all available state records.

Figure 7: Total Spending on Early Childhood Programs in New Mexico, FY2012-FY2019 (millions of dollars)



Note: Head Start and Early Head Start are federally funded.
Source: New Mexico Legislative Finance Committee Post-Session Reports: April 2014, May 2015, March 2016, May 2017 and May 2018.

Figure 8: Spending on Early Childhood Programs in New Mexico FY2012 - FY2019, by Program (millions of dollars)



Note: Head Start and Early Head Start are federally funded. The Childcare Assistance and Home Visiting programs rely on a combination of federal and state funding. All other programs rely solely on state funding. FIT is the Family Infant Toddler program, which provides early childhood services mandated by the federal Individuals with Disabilities Education Act.

Source: New Mexico Legislative Finance Committee Post-Session Reports: April 2014, May 2015, March 2016, May 2017 and May 2018.

Appendix A

Table A1: New Mexico State Trust Land Beneficiaries

Beneficiary	Surface Estate Acreage	% of Total Surface Estate Acreage	Mineral Estate Acreage	% of Total Mineral Estate Acreage
Common Schools	6,809,599	76.02	9,767,525	77.01
University of New Mexico	253,140	2.83	344,864	2.72
New Mexico State University	195,571	2.18	254,200	2.00
Western New Mexico University	77,500	0.87	118,642	0.94
New Mexico Highlands University	77,500	0.87	118,642	0.94
Northern New Mexico College	31,918	0.36	56,563	0.45
Eastern New Mexico University	82,802	0.92	104,039	0.82
New Mexico Institute of Mining and Technology	162,588	1.82	219,019	1.73
New Mexico Military Institute	135,578	1.51	160,011	1.26
New Mexico School for the Deaf	87,079	0.97	107,022	0.84
New Mexico School for the Blind and Visually Impaired	100,827	1.13	118,830	0.94
New Mexico Miners' Colfax Medical Center	98,557	1.10	120,766	0.95
Las Vegas Medical Center	101,242	1.13	164,024	1.29
Carrie Tingley Children's Hospital	18,799	0.21	13,692	0.11
New Mexico Penitentiary	113,509	1.27	159,695	1.26
New Mexico Boys' School	50,814	0.57	62,331	0.49
Charitable, Penal and Reform (multiple beneficiaries divided equally)	74,551	0.83	99,620	0.79
University Saline Lands	1,044	0.01	1,502	0.01
Water Reservoirs	341,626	3.81	470,417	3.71
Rio Grande Improvements	54,221	0.61	89,202	0.70
Capitol Buildings	88,846	0.99	132,112	1.04
State Park Commission			520	0.00
Totals	**8,957,311**	**100.00**	**12,683,328**	**100.00**

Source: Constructed from New Mexico State Land Office (2018)