Actuarial Valuation
of
Virginia529
Defined Benefit 529 Program
as of June 30, 2021

By:

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November 30, 2021

Board of the Virginia College Savings Plan
Commonwealth of Virginia
Virginia College Savings Plan
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Ladies & Gentlemen:

This report presents the results of the actuarial valuation of the Defined Benefit 529 Program (DB529 Program) as of June 30, 2021.

Purpose

The main purposes of this report are:

- to calculate the actuarial present value of the obligations under the Program's legacy Prepaid529 contracts (accounts) and Tuition Track Portfolio accounts purchased through June 30, 2021 and compare the value of those obligations with the Program's assets as of that date;

- to review the experience and changes in the actuarial assumptions during the last year and indicate their effects on the results; and

- to set forth the basis for the actuarial assumptions and methods utilized in those calculations.

The results contained in this report are based on account data and preliminary financial statements provided by the Virginia College Savings Plan. We have relied on this data in preparing this report.

Background

The Virginia College Savings Plan ("VA529" or "the Plan"), a body politic and corporate and an independent agency of the Commonwealth of Virginia was created in 1994 by the Virginia General Assembly to enhance the accessibility and affordability of higher education for all citizens of the Commonwealth. The longest standing mandate centers on educational attainment, on which VA529 has focused since opening its first program in 1996 by offering education savings programs to help make higher education more affordable and accessible for all citizens of the Commonwealth. VA529's mature programs are comprised of prepaid and education savings programs, including the legacy Prepaid529 (a defined benefit option), Invest529 and CollegeAmerica programs.

The legacy Prepaid529 program was closed to new participants after its final enrollment period in 2019. A successor program was opened in February 2021. This program is known as the Tuition Track Portfolio (TTP) and is offered as a defined benefit option within the Invest529 program. VA529 continues to service existing customers in the Prepaid529 program. Together Prepaid529 and TTP are known as the Defined Benefit 529 Program (“DB529” or “the Program”). Since TTP is a continuation of the legacy prepaid program, funds are combined and invested in the Program Fund to meet future obligations.

The Program Fund consists of payments received pursuant to legacy Prepaid529 contracts, purchases of TTP units, bequests, endowments or grants from the United States government, its agencies and instrumentalities, and any other available sources of funds, public or private, allocated to the Program Fund. Any moneys remaining in the Program at the end of a biennium shall remain in the Fund, including interest and income earned from the investment of such funds.

In 1998, the Virginia General Assembly passed legislation that requires the Governor to include in each year’s state budget an amount to cover the Plan’s obligations, in the event “the Plan is unable to meet its current obligations.” The Governor has included the provision in subsequent budget submissions to meet the obligations of the Program, and the General Assembly has included the provision in subsequent Appropriation Acts, including Chapter 552 of the 2021 Virginia Acts of the Assembly (2021 Appropriation Act).

Program Design

VA529 is the program sponsor for the DB529 Program and other education savings programs. The DB529 Program is a prepaid program with defined benefits and no market risk to participants. The other education savings programs, including Invest529 (excluding TTP accounts) and CollegeAmerica, are offered directly from VA529 (Invest529) or through financial advisors (CollegeAmerica) and are subject to market and other risks to the participants.

VA529’s Defined Benefit 529 Program

Prepaid529 closed to new participants in 2019. Benefits in this program cover tuition and mandatory fees at Virginia’s public higher educational institutions. At redemption, the contract pays the current tuition and mandatory fees at the Virginia public institution that the beneficiary attends. The benefits vary if the beneficiary does not attend a Virginia public institution. With the establishment of Invest529 and other savings programs, contract holders have the option of rolling over the value of their Prepaid529 contract into a savings account. The value of the Prepaid529 contract for such rollovers is the accumulated contributions plus the reasonable rate of interest set by Virginia529. This option to roll over the contract has effectively added a minimum benefit to the Program.

In 2019, The Virginia General Assembly passed legislation that included provisions for Prepaid529 contracts entered prior to July 1, 2019. These provisions allow for the “Minimum Benefit” payout directly from Prepaid529 to qualified higher education institutions when the accumulated contributions at the reasonable rate of interest set by Virginia529 exceeds the normal payout from the program. To address significant increases in higher education tuition, increasing disparity in tuition policies at Virginia's 15 public universities and a desire to make the defined benefit program more affordable and more accessible to more Virginians, the Board permanently closed Prepaid529 to new enrollments as of May 1, 2019 and began to develop its successor defined benefit prepaid program.

In February 2021, TTP was launched as the successor defined benefit option to Prepaid529. This resulted from legislation passed in 2019 by the Virginia General Assembly that included provisions for payments to any qualified higher education institutions based on enrollment-weighted average tuition (Average Tuition) at Virginia’s public higher education institutions as determined by the Board.

TTP allows participants to purchase a desired number of units toward tuition and other qualified higher education expenses. The purchased units will keep pace with average tuition inflation at Virginia public universities. When withdrawn, participants will receive one year of then-current Average Tuition for every 100 units purchased (one TTP unit = 1/100 of Average Tuition), regardless of how much Average Tuition has increased since purchase.

TTP is only available for account owners or beneficiaries who are Virginia residents at the time of initial purchase. TTP units can be purchased up until June 30 of the beneficiary’s high school graduation year. A maximum of 1,000 Tuition Track units can be held at any one time for a beneficiary. If units are redeemed, more units can be purchased to reach the 1,000-unit cap.

TTP units are eligible for use at Average Tuition value after the units have been held for three years or more and when the beneficiary graduates from high school or begins taking eligible post-secondary courses, whichever comes first. If units are redeemed prior to the beneficiary’s high school graduation, they will receive the purchase price plus Tuition Track Interest (same as the reasonable rate of interest for Prepaid529), assuming the units have been held for three or more years. Units that are redeemed before being held for at least three years will be returned at purchase price.

Statutory Requirements

The Code of Virginia, Title 23.1, Subtitle II, Chapter 7 provides limited guidance for establishing the actuarial basis to evaluate VA529’s DB529 Program. The Code requires an annual audit of the Program and states in part that if the annual accounting and audit reveal that there are insufficient funds to ensure the “actuarial soundness” of the Program, the “Board may adjust the terms of subsequent prepaid tuition contracts, arrange refunds for current purchasers to ensure actuarial soundness, or take such other action the Board deems appropriate."

"Actuarial soundness" is not a precise concept and there is no generally accepted understanding of the meaning of this phrase within the actuarial profession, especially with respect to prepaid tuition plans. For purposes of this report, we have assumed that the phrase "actuarially sound," when applied to the Program, means that the Fund has sufficient assets in the combined program to cover the actuarially estimated value of the tuition obligations (including any administrative costs associated with those Prepaid Contracts or TTP accounts). "Sufficient assets" reflects the value of the combined total Fund assets, including the value of future installment payments due under current contracts for Prepaid529.

We have also interpreted these Sections to require that the actuarial liabilities be evaluated using sound actuarial principles that are generally consistent with the practices and principles widely used for retirement programs. Reference to other programs is necessary because of the innovative nature of a prepaid tuition program. No generally accepted standard of practice has evolved within the actuarial profession specifically addressing prepaid tuition programs. We chose the standards applicable to retirement programs because these programs generally provide for payments at some future date where that payment has a high probability of payment at, or close to, some specific age.

Valuation Basis

The assumptions selected for this report are intended to be "best estimates".

The method for determining the "best estimate" liability for the Program reflects the possible variability of inflation, tuition, and investment returns and the correlation between each of these variables. The methodology is described in the section below, Variability of Results and Valuation Basis.

Investment Policy

On August 29, 2019, the Board of the Virginia College Savings Plan adopted a new target asset allocation strategy for Prepaid529. The new asset allocation targets are reflected in this valuation report.

The investment strategy is important because it sets forth acceptable investment allocations among asset classes. The asset allocation affects the magnitude and variability of expected investment returns and therefore the financial structure of the plan. For the valuation, we have assumed that DB529 investments will be allocated as shown below, based on the investment policy target allocations:

Asset Category	
Equities	22.0%
Fixed Income	52.5%
Alternative Investments	25.5%

Actuarial Assumptions

The actuarial assumptions used to prepare this report are summarized in Appendix C. The two most significant of those assumptions are the rates of investment return and tuition growth in the future. The Virginia College Savings Plan selected both of these assumptions. They are:

- the investment return assumption of 5.50% per year, net of investment related expenses (this is lower than the 5.75% assumption used to prepare the prior year's report); and,

- the annual tuition growth rate assumptions summarized in the following table.

	Universities	Community Colleges
Fall 2022 and Fall 2023	4.0%	2.0%
Fall 2024 and thereafter	6.0%	6.0%

- In the prior year's valuation, the tuition growth assumption for universities was 4.0% for fall 2022 and 6.0% thereafter; the tuition growth assumption for community colleges was 2.0% for fall 2022 and 6.0% thereafter.

Summary of Results

The actuarial value of the obligations of the DB529 Program as of June 30, 2021 is summarized below and compared with the total assets of the Program.

	Present Value of Obligations For Future Payments	Value of Total Program Assets	Actuarial Reserve/ (Deficit)
		(Amounts in Millions)	
DB529 Program:			
Tuition Obligations	$1,712.0	n/a	n/a
Administrative Expenses	22.0	n/a	n/a
Grand Total	$1,734.0	$3,354.5	$1,620.5

This work product was prepared solely for the Virginia College Savings Plan for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

As indicated above, the DB529 Program has assets that exceed the “best estimate” of the obligations by roughly $1,620.5 million or 93.5%. Unfavorable future experience would adversely affect this position. It would be desirable to maintain the actuarial reserve over time to protect this position.

The present value of future obligations for Administrative Expenses reflects the expected costs of maintaining each account in place (as of June 30, 2021) until all benefits have been paid. It does not include the future expenses of the DB529 Program associated with general overhead and marketing attributable to units sold in the future. It is our understanding that the administrative expenses associated with operating the Program (including the account maintenance costs) will be provided by the Operating Fund and will not be drawn from the DB529 Fund. However, we include the projection of these future account maintenance costs as part of the Program’s obligations in our analysis.

Actuarial Gain/Loss Analysis

During the 2021 fiscal year, the actuarial reserve position of the Defined Benefit 529 Program increased from $1,050.2 million to $1,620.5 million or 93.5% of obligations. Actuarial gains add to the reserve while actuarial losses decrease the reserve. Each of the factors affecting the change in the actuarial reserve/(deficit) is discussed below.

The actuarial reserve was expected to grow during the year by about $60.4 million due to the passage of time. (The obligations are calculated as present values which grow with interest with the passage of time.)

The rate of return on the Program’s investments (net of investment management fees) for the fiscal year was 23.63% on a time-weighted basis and 23.54% on a dollar-weighted basis. For the previous valuation, a 5.75% rate of return was assumed. This produced a net actuarial gain of approximately $471.6 million.

Payouts for some of the accounts are based on the payments made under the account brought forward at the reasonable rate of interest or the actual rate of return on the portfolio. See Appendices C and F for an explanation of the assumptions and the payouts. During the past year the actual rate of return on the portfolio was 23.63% (17.88% higher than the 5.75% assumption). The higher than expected actual account balances resulted in an actuarial loss of approximately $19.1 million.

The Board opened the Tuition Track Portfolio Program in February 2021. A total of 2,496 new accounts were opened with total unit sales of 237,922. Each unit represents 1% of enrollment-weighted average annual tuition (“Average Tuition”) at the Virginia public 4-year universities. The units were priced at $136.36 which was 1% of Average Tuition for the 2020-2021 academic year. Based on last year’s valuation assumptions, the total liability for these new units was $2.5 million higher than the sales revenue. This reduced the reserve by $2.5 million.

The enrollment-weighted average university tuition and mandatory fee amount for the 2021-2022 school year increased by 2.3%, a smaller increase than the 4.0% rate assumed in the prior valuation. Enrollment-weighted tuition and mandatory fees at community colleges increased by about 0.2%, compared to the 2.0% increase assumed in the prior valuation. These differences from the assumptions resulted in an actuarial gain of $19.9 million.

The funds to cover the operating expenses for the Program were provided by the Operating Fund and not drawn for the Program's assets. In last year's valuation, we included $4.2 million in the total liability to provide for the year's expenses. The $4.2 million is an increase to the reserve.

The volatility and correlation assumptions for the investment returns and tuition increases were updated. This decreased the reserve by $0.4 million. The assumption for the reasonable rate was changed from 2.50% each year to a fixed 0.02% for the current fiscal year and 2.40% thereafter. This increased the reserve by $11.7 million.

The investment return assumption was changed from 5.75% per year to 5.50% per year. This change decreased the reserve by $18.5 million.

The tuition growth assumption for universities was changed from 4.0% for fall 2022 and 6.0% thereafter to 4.0% for fall 2022 and fall 2023 and then 6.0% thereafter. The tuition growth assumption for community colleges was changed from 4.0% for fall 2022 and 6.0% thereafter to 2.0% for fall 2022 and fall 2023 and then 6.0% thereafter. These changes increased the reserve by $11.4 million.

VA529 staff identified 2800 accounts that were in the process of being cancelled or would be cancelled within the next few months due to having reached the 10-year time limit. These accounts were valued at their Reasonable Rate account balance. This increased the reserve by $28.5 million.

We updated the methodology to reflect the enrollment bias toward more expensive Virginia public universities under the legacy Prepaid529 accounts. The previous methodology assumed that all future tuition payouts to Virginia public universities were 108% of enrollment-weighted average tuition. This amount was compared to the Reasonable Rate account balance each year for each account and the greater of these two amounts was used as the projected payout for valuation purposes. We now compare each of the Virginia public university projected tuition and fee amounts to the account's projected Reasonable Rate account balance and calculate a probability weighted payout based on the recent historical distribution of tuition redemptions at each of the schools. Based on this updated distribution of redemptions and current tuition amounts across the public universities, the average tuition payout before considering account balances is expected to be 109.4% of enrollment weighted average tuition. This methodology change reduced the reserve by $30.3 million.

VA529 staff performed an analysis this year to determine the expected costs, on a per contract basis for Prepaid529 and on a per account basis for TTP, of administering the contracts and accounts. The expected costs for the 2021-2022 year are $77.85 per contract for the Prepaid529 contracts and $20.76 per account for the TTP. These costs are expected to increase at 3.0% each year. In last year's valuation, we divided the administrative costs for the Prepaid529 contracts between a contract maintenance expense of $64.44 per contract and a distribution cost per contract in payment status of $28.53. The new single expense assumption per account replaces these two costs. The change in the expense assumption reduced the reserve by $0.2 million.

Other experience increased the reserve by about $33.6 million. This includes fewer accounts redeeming their units for tuition during the year than expected as well as rollover, cancellation, and forfeiture levels different than assumed in last year's valuation and other variations from the actuarial assumptions.

In summary, the effect of experience and assumption changes on the actuarial reserve/(deficit) can be summarized as follows:

(Amounts in Millions)

Actuarial Reserve / (Deficit) as of June 30, 2020	$ 1,050.2
Interest on the reserve at 5.75%	60.4
Investment return during 2020-2021 higher than expected	471.6
Change to Reasonable Rate and Actual account balances	(19.1)
New TTP unit sales	(2.5)
Tuition increases for 2021-2022 lower than expected	19.9
Account maintenance expenses paid by Operating Fund	4.2
Change to investment and tuition volatility assumptions	(0.4)
Change to Reasonable Rate assumption	11.7
Change to investment return assumption	(18.5)
Change to tuition growth assumption	11.4
Change in methodology for accounts at 10-year limit	28.5
New methodology to reflect bias to more expensive schools	(30.3)
Change to account maintenance expense assumption	(0.2)
Other experience	33.6
Total changes to the Actuarial Reserve	$ 570.3
Actuarial Reserve / (Deficit) as of June 30, 2021	$ 1,620.5

Valuation Basis

The present values of the obligations shown above were based on assumptions which represent an estimate of anticipated experience under the Fund that are reasonably related to past educational cost and investment data. Differences between those projections and actual amounts will depend on the extent to which future experience conforms to the assumptions made for this analysis.

A prime source of variation will be normal fluctuations that occur in the rate of increase in tuition, investment returns, and expense inflation. One way of estimating the range of possible outcomes is to stochastically model the financial operation of the Program using "Monte Carlo" techniques. This approach involves preparing 1,000 projections of financial results under randomly derived scenarios of tuition growth, investment returns, and expense inflation. Each of these scenarios is based on statistical factors such as standard deviation and correlation that were established by reviewing historical results adjusted where appropriate to reflect current conditions. By tabulating the results under all of these projections we estimated the probability that current assets, along with the expected remaining legacy contract payments plus investment returns, will be sufficient to cover the obligations of the DB529 Program.

We have summarized in the table below the results of this process. It is important to understand that these results are only illustrative of the range of results that are possible and are dependent on the assumptions utilized. The assumptions are presented in Appendix C.

(Amounts in Millions)

Percentage of "Best Estimate" Reserve	Total Defined Benefit 529 Fund Value at June 30, 2021	Probability of Funds Exceeding Obligation
50%	$ 867.0	0%
75%	1,300.5	1%
90%	1,560.6	22%
100%	1,734.0	50%
110%	1,907.4	75%
125%	2,167.5	94%
150%	2,601.0	99%
193%	3,354.5	99%*

*actual Fund position.

The present value of obligations for future payments shown previously is the amount of assets necessary to have a 50% probability of meeting all program obligations, including administrative costs, associated with current accounts. The actual Defined Benefit 529 fund balance at June 30, 2021 of $3,354.5 million is 193.5% of the actuarially determined "Best Estimate" Reserve amount of $1,734.0 million. As indicated in the above table, this fund balance is estimated to have a 99% probability of being adequate to satisfy all of the Program's obligations using current assumptions.

Cash Flow Projection

The table in Appendix E shows a cash flow projection based on a set of deterministic assumptions that produce the same Present Value of Obligations for Future Payments as the "best estimate" actuarial assumptions used in the Monte Carlo simulations. The deterministic cash flow projection assumes that University tuition increases 4.0% for fall 2022 and fall 2023 and 6.0% per year thereafter, Community College tuition increases 2.0% for fall 2022 and fall 2023 and 6.0% per year thereafter, and DB529 assets earn 5.22% each year. The starting Market Value of Invested Assets as of July 1, 2021 is $3,234.0 million. The projection assumes no additional units are sold. At the end of the 2046 Fiscal Year all tuition obligations associated with accounts and units already purchased are expected to have been paid resulting in a final cumulative reserve of $5,789.1 million. Since the actuarial assumptions are intended to represent "best estimates" of future expenses, there is a 50% chance that actual results will be better than this projection and a 50% chance that actual results will be worse.

Variability of Results

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: future experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and increases or decreases expected as part of the natural operation of the methodology used for these measurements. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

Data Reliance

In performing this analysis, we relied on data and other information (some oral and some in writing) provided by the staff of the Virginia College Savings Plan. This information includes, but is not limited to, contractual provisions, account holder data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

Actuarial Assumptions

All costs, liabilities, and other factors for the DB529 Program have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the Program and reasonable expectations). Further, the actuarial assumptions in the aggregate are reasonable and are related to the experience of the Program and to reasonable expectations. The following actuarial assumptions were set by the Virginia College Savings Plan:

1) the investment return assumption of 5.50% per year, and;

2) the tuition growth assumption for universities of 4.0% for fall of 2022 and fall 2023 and 6.0% per year thereafter and the tuition growth assumption for community colleges of 2.0% for fall of 2022 and fall 2023 and 6.0% per year thereafter.

Certification

Based on the foregoing assumptions, the Defined Benefit 529 Program has sufficient assets, including the value of future installment payments, to cover the actuarially estimated value of the tuition obligations under all accounts outstanding as of the valuation date (including any administrative costs associated with those accounts). This determination has been based on reasonable actuarial assumptions that represent the Virginia College Savings Plan's best estimate of anticipated experience under the DB529 Program taking into account past experience and future expectations.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices.

Third Party Distribution

This report was prepared exclusively for the Virginia College Savings Plan for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning the Virginia College Savings Plan's operations, and uses the Virginia College Savings Plan's data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs.

Qualifications

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

We look forward to reviewing the results of our analyses with you at your earliest convenience.

Respectfully submitted,

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Defined Benefit 529 Program

I. Statement of Assets as of June 30, 2021

	Investments	Market Value
1)	Equities	$ 1,109,885,237
2)	Fixed Income including Accrued Interest	1,746,227,362
3)	Futures, REIT Fund, and Real Estate	287,253,305
4)	Cash & Cash Equivalents	102,211,305
5)	Pending Trades Receivable	16,389,438
6)	Accounts Receivable	1,487,140
7)	Other Receivables	9,894,051
8)	Accounts Payable	(4,554,913)
9)	Pending Trades Payable	(34,800,496)
	Total Market Value of Investments	$ 3,233,992,430
	Present Value of Installment Contract Receivables	120,497,881
	Value of Total Fund Assets	$ 3,354,490,311

II. Reconciliation of Investments

1)	Market Value of Investments at June 30, 2020	$ 2,716,955,472
2)	Tuition Units Purchased	72,100,382
3)	Interest and Dividends	301,157,142
4)	Change in Fair Value of Investments	339,207,113
5)	Tuition Benefits Paid	(142,271,450)
6)	Refunds Paid	(12,287,258)
7)	Net Rollovers	(24,487,996)
8)	Investment Management Fees	(16,372,131)
9)	Net Effect of Changes in Accruals	(8,845)
10)	Market Value of Investments at June 30, 2021	$ 3,233,992,430

Time-weighted rate of return	23.63%
Dollar-weighted rate of return	23.54%

Legacy Prepaid529

Contract Data as of June 30, 2021 – Contracts Purchasing Tier I Units Only - Number of Contracts

Matriculation Year	Total Years of Community College Purchased / Total Years of University Purchased										Total by Payout Year	Percent of Total
	0	0	0	0	0	0	0	0	0	0		
	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5		
2000-2001	0	0	0	2	0	0	0	16	0	1	19	0.0%
2001-2002	0	3	0	2	0	0	0	27	0	0	32	0.1%
2002-2003	0	8	0	2	0	0	0	37	0	5	52	0.1%
2003-2004	0	2	0	7	0	1	0	47	0	1	58	0.1%
2004-2005	0	6	0	7	0	1	0	69	0	4	87	0.2%
2005-2006	0	12	0	14	0	1	0	119	0	5	151	0.3%
2006-2007	0	11	0	24	0	11	0	131	0	13	190	0.4%
2007-2008	0	23	0	28	0	4	0	150	0	16	221	0.4%
2008-2009	0	22	0	30	0	9	0	224	0	24	309	0.6%
2009-2010	0	28	0	22	0	11	0	284	0	23	368	0.7%
2010-2011	0	36	0	51	0	14	0	322	0	36	459	0.9%
2011-2012	0	33	0	45	0	15	0	383	0	37	513	1.0%
2012-2013	0	62	1	70	0	21	0	458	0	55	667	1.3%
2013-2014	0	61	0	77	0	22	1	564	0	56	781	1.6%
2014-2015	0	75	0	78	0	22	0	619	0	60	854	1.7%
2015-2016	1	80	0	97	2	23	2	677	0	70	952	1.9%
2016-2017	3	95	3	126	0	41	1	808	0	74	1,151	2.3%
2017-2018	7	127	3	171	2	55	5	1,077	1	114	1,562	3.1%
2018-2019	28	238	11	288	3	76	3	2,299	1	152	3,099	6.2%
2019-2020	76	320	18	354	8	120	3	2,207	1	125	3,232	6.5%
2020-2021	146	448	32	504	17	123	8	1,949	0	109	3,336	6.7%
2021-2022	293	724	60	577	31	166	9	2,066	2	135	4,063	8.2%
2022-2023	431	714	65	663	32	148	7	1,587	2	58	3,707	7.5%
2023-2024	453	737	59	518	25	125	11	1,458	2	64	3,452	6.9%
2024-2025	443	619	68	480	20	114	3	1,210	4	75	3,036	6.1%
2025-2026	481	610	48	464	25	77	11	1,021	1	62	2,800	5.6%
2026-2027	452	526	52	349	15	75	5	808	3	42	2,327	4.7%
2027-2028	420	486	50	371	15	74	7	740	3	40	2,206	4.4%
2028-2029	400	407	53	301	19	56	8	620	1	30	1,895	3.8%
2029-2030	422	363	44	246	7	34	3	505	1	28	1,653	3.3%
2030-2031	387	290	42	230	13	45	3	355	1	17	1,383	2.8%
2031-2032	414	283	31	159	12	24	4	309	2	14	1,252	2.5%
2032-2033	348	212	27	151	6	27	7	242	1	21	1,042	2.1%
2033-2034	275	181	28	112	10	20	3	181	1	13	824	1.7%
2034-2035	234	155	19	114	8	18	2	159	0	9	718	1.4%
2035-2036	186	142	20	105	12	28	5	150	1	11	660	1.3%
2036-2037	79	83	10	56	1	14	2	109	0	11	365	0.7%
2037-2038	31	34	4	46	2	6	0	41	0	7	171	0.3%
2038-2039	0	5	0	1	0	0	0	11	0	1	18	0.0%
2039-2040	0	0	0	1	0	0	0	7	0	0	8	0.0%
Total	6,010	8,261	748	6,943	285	1,621	113	24,046	28	1,618	49,673	
Percent of Total	12.1%	16.6%	1.5%	14.0%	0.6%	3.3%	0.2%	48.4%	0.1%	3.3%		

Legacy Prepaid529

Contract Data as of June 30, 2021 – Contracts Purchasing Tier II Units Only - Number of Contracts

	Total Years of Community College Purchased															
	Total Years of University Purchased														Total by	Percent
Matriculation	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	8	10	Payout	of
Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Year	Total
2000-2001	0	1	0	4	0	0	0	0	0	0	0	0	0	0	5	0.2%
2001-2002	0	0	0	13	0	0	0	0	0	0	0	0	0	0	13	0.6%
2002-2003	0	2	0	7	0	0	0	0	0	0	0	0	0	0	9	0.4%
2003-2004	0	1	0	4	0	1	0	0	0	0	0	0	0	0	6	0.3%
2004-2005	0	2	0	15	0	0	0	0	0	0	0	0	0	0	17	0.8%
2005-2006	0	1	0	19	0	1	0	0	0	0	0	0	0	0	21	1.0%
2006-2007	0	1	0	17	0	1	0	0	0	0	0	0	0	0	19	0.9%
2007-2008	0	2	0	26	0	2	0	0	0	0	0	0	0	0	30	1.5%
2008-2009	0	1	0	24	0	1	0	0	0	0	0	0	0	0	26	1.3%
2009-2010	0	2	0	31	0	5	0	0	0	0	0	0	0	0	38	1.9%
2010-2011	0	11	0	34	0	1	0	0	0	0	0	0	0	0	46	2.3%
2011-2012	0	4	0	39	0	7	0	0	0	0	0	0	0	0	50	2.4%
2012-2013	1	8	0	38	0	6	0	0	0	0	0	0	0	0	53	2.6%
2013-2014	0	7	0	37	0	2	0	0	0	0	0	0	0	0	46	2.3%
2014-2015	0	16	0	51	0	7	0	0	0	0	0	0	0	0	74	3.6%
2015-2016	0	13	0	61	0	2	0	0	0	0	0	0	0	0	76	3.7%
2016-2017	0	13	0	44	0	0	0	0	0	0	0	0	0	0	57	2.8%
2017-2018	2	16	0	52	0	7	0	0	0	0	0	0	0	0	77	3.8%
2018-2019	4	12	0	59	2	7	0	0	0	0	0	0	0	1	85	4.2%
2019-2020	5	20	0	70	0	15	0	2	0	0	0	0	0	2	114	5.6%
2020-2021	6	29	0	90	1	10	0	0	0	0	0	0	0	0	136	6.7%
2021-2022	5	39	1	82	1	9	0	0	0	0	0	0	0	0	137	6.7%
2022-2023	11	37	0	78	1	1	0	1	0	0	0	0	0	0	129	6.3%
2023-2024	8	39	1	72	2	7	0	2	0	0	0	0	0	1	132	6.5%
2024-2025	9	39	1	54	1	4	0	1	0	0	0	0	0	0	109	5.3%
2025-2026	10	27	1	38	0	2	0	1	0	1	0	0	0	2	82	4.0%
2026-2027	8	12	0	41	0	8	0	1	1	0	0	0	0	0	71	3.5%
2027-2028	10	18	0	33	0	3	0	0	0	2	0	0	0	1	67	3.3%
2028-2029	11	19	1	37	1	2	0	1	0	0	0	0	0	0	72	3.5%
2029-2030	10	11	0	39	0	3	0	1	1	0	0	0	0	0	65	3.2%
2030-2031	20	11	0	20	1	2	1	3	0	0	0	0	0	1	59	2.9%
2031-2032	18	7	2	15	0	1	0	0	0	0	0	0	0	0	43	2.1%
2032-2033	12	10	0	14	0	2	0	0	0	0	0	0	0	0	38	1.9%
2033-2034	11	4	1	7	0	1	0	3	0	0	0	0	0	0	27	1.3%
2034-2035	4	4	0	4	0	0	0	0	0	0	0	0	0	0	12	0.6%
2035-2036	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.0%
2036-2037	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.0%
2037-2038	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
2038-2039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
2039-2040	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.0%
Total	165	439	8	1,272	10	120	1	16	2	3	0	0	0	8	2,044	
Percent of Total	8.1%	21.5%	0.4%	62.2%	0.5%	5.9%	0.0%	0.8%	0.1%	0.1%	0.0%	0.0%	0.0%	0.4%		

Appendix B
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Legacy Prepaid529

Contract Data as of June 30, 2021 – Contracts Purchasing Tier I and Tier II Units - Number of Contracts

Matriculation Year	Total Years of Community College Purchased / Total Years of University Purchased																																	Total by Payout Year	Percent of Total
	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2	2	2	2.5	2.5	3	3	3	3		
	0.5	1	1.5	2	2.5	3.5	0.5	1	1.5	2	2.5	3	4	5	0.5	1	1.5	2	2.5	3	0.5	1	1.5	2	3	4	5	1.5	2.5	1	2	3	5		
2000-2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0.1%
2001-2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0.1%
2002-2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0.1%
2003-2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	5	0.3%
2004-2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0.2%
2005-2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	1	7	0.4%
2006-2007	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	10	0	0	0	0	0	0	0	0	0	12	0.7%
2007-2008	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	0	0	0	0	0	10	0.6%
2008-2009	0	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	3	0	16	0	0	0	0	0	1	0	0	1	25	1.4%
2009-2010	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	25	1	0	0	0	0	0	0	0	1	30	1.7%
2010-2011	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	27	1	0	1	0	0	0	0	0	1	36	2.0%
2011-2012	0	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	27	0	1	0	0	0	0	0	0	1	36	2.0%
2012-2013	0	0	0	0	0	0	0	4	0	3	0	4	1	0	0	0	0	0	0	0	0	1	0	32	0	0	0	0	0	0	0	0	0	45	2.5%
2013-2014	0	0	0	0	0	0	0	3	0	1	0	3	1	0	0	0	0	0	0	0	0	1	1	48	2	1	1	0	0	0	0	1	1	64	3.6%
2014-2015	0	0	0	0	0	0	0	1	0	1	0	7	0	1	0	0	0	0	0	0	0	3	0	66	1	0	0	0	0	0	0	0	0	80	4.5%
2015-2016	0	0	0	0	0	0	1	4	0	0	0	4	0	0	0	0	0	0	0	0	0	2	0	45	1	2	0	0	0	1	0	1	0	61	3.4%
2016-2017	0	0	0	0	0	0	1	3	0	5	0	4	1	1	0	0	0	0	0	0	0	4	0	52	0	2	0	0	0	1	0	0	3	77	4.4%
2017-2018	0	0	1	1	0	0	1	9	0	3	0	3	0	0	0	1	0	0	0	1	0	7	0	79	3	0	0	0	0	1	0	0	2	112	6.3%
2018-2019	0	0	0	0	0	0	0	6	0	2	0	5	2	0	0	0	0	0	0	0	0	2	1	97	2	0	0	0	0	1	0	1	1	120	6.8%
2019-2020	1	0	2	0	0	0	0	16	0	3	0	10	0	1	0	0	0	0	0	0	0	7	1	116	3	0	0	0	0	0	0	0	1	161	9.1%
2020-2021	1	0	2	0	0	1	0	10	0	5	0	5	1	0	0	0	1	0	0	0	0	14	0	100	3	0	0	0	0	1	0	0	0	144	8.1%
2021-2022	1	1	0	0	1	0	0	9	0	2	2	6	2	0	0	0	0	0	0	0	0	6	0	94	1	0	1	0	0	2	0	1	3	132	7.5%
2022-2023	2	1	0	0	0	0	1	6	1	3	1	5	1	1	0	0	0	0	0	0	0	7	1	67	4	0	0	0	1	2	1	0	0	105	5.9%
2023-2024	2	0	0	0	0	0	1	3	0	4	0	9	1	0	0	1	0	0	1	0	2	9	0	71	3	1	0	0	0	0	0	0	2	110	6.2%
2024-2025	0	0	0	0	0	0	1	1	1	2	0	5	0	1	0	0	0	1	0	0	0	7	0	60	0	0	1	0	0	0	0	0	0	80	4.5%
2025-2026	1	0	0	0	0	1	1	2	2	6	0	2	1	0	0	0	0	0	0	0	0	4	0	44	4	0	0	0	1	0	0	0	2	71	4.0%
2026-2027	1	0	1	0	0	0	1	3	0	2	0	4	2	0	0	0	0	0	0	0	0	5	0	25	0	0	0	0	0	0	0	0	1	45	2.5%
2027-2028	2	1	0	0	0	0	1	4	0	2	0	2	1	0	0	0	0	0	0	0	0	4	0	29	1	0	0	0	0	0	1	0	0	48	2.7%
2028-2029	8	0	0	0	0	0	0	4	0	3	0	3	1	0	0	0	0	0	0	0	0	4	0	19	0	0	0	1	0	0	0	0	0	43	2.4%
2029-2030	1	1	0	0	0	0	1	3	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	18	0	0	0	0	0	0	0	0	0	27	1.5%
2030-2031	0	0	1	0	0	0	0	2	0	2	0	1	0	0	0	0	0	0	0	0	0	3	0	12	0	1	0	0	0	0	0	0	0	22	1.2%
2031-2032	3	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	15	0.8%
2032-2033	3	0	0	1	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	7	0	1	0	0	0	0	0	0	0	17	1.0%
2033-2034	4	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	7	0	0	0	0	0	0	0	0	0	16	0.9%
2034-2035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0.1%
2035-2036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0.1%
2036-2037	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1%
2037-2038	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0.1%
2038-2039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
2039-2040	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Total	30	4	9	3	1	2	12	105	5	54	3	91	15	5	1	2	1	1	1	1	3	102	4	1,229	32	9	4	1	2	10	2	4	21	1,769	
Percent of Total	1.7%	0.2%	0.5%	0.2%	0.1%	0.1%	0.7%	5.9%	0.3%	3.1%	0.2%	5.1%	0.8%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	5.8%	0.2%	69.5%	1.8%	0.5%	0.2%	0.1%	0.1%	0.6%	0.1%	0.2%	1.2%		

Tuition Track Portfolio

Participant Data as of June 30, 2021

Projected Enrollment Year	Number of Accounts	Total Number of Units	Average Number of Units
2021-2022	38	4,544	120
2022-2023	57	6,478	114
2023-2024	62	8,880	143
2024-2025	132	19,744	150
2025-2026	145	17,718	122
2026-2027	169	20,356	120
2027-2028	161	21,767	135
2028-2029	150	17,137	114
2029-2030	169	20,897	124
2030-2031	139	10,155	73
2031-2032	164	17,378	106
2032-2033	136	10,981	81
2033-2034	149	11,332	76
2034-2035	182	10,905	60
2035-2036	103	9,037	88
2036-2037	121	6,732	56
2037-2038	126	9,229	73
2038-2039	169	10,757	64
2039-2040	124	3,895	31
Total	2,496	237,922	95

Defined Benefit 529

Summary of Actuarial Assumptions

Investment / Economic Assumptions for Stochastic Simulation Model:

The standard deviation and correlation assumptions are based on actual historical returns and tuition growth. Expected return and risk assumptions are based on Milliman's capital market assumptions, but are adjusted so that the expected annualized return on the portfolio is 5.50%, which is the assumption set by the Board.

	Inflation	Reasonable Rate	Equity	Fixed Income	Alternative Investments	University Tuition	Community College Tuition
Expected Arithmetic Mean Annual Return	2.30%	2.40%	8.15%	4.00%	8.05%	6.06%	6.11%
Standard Deviation	1.60%	1.25%	19.85%	5.35%	18.30%	4.15%	6.65%
Correlation:							
Inflation	1.00	0.55	0.48	0.27	0.38	0.15	0.00
Reasonable Rate		1.00	0.04	0.28	0.02	-0.11	-0.13
Equity			1.00	0.41	0.80	0.01	-0.11
Fixed Income				1.00	0.39	0.40	0.10
Alternative Investments					1.00	-0.06	-0.23
University Tuition						1.00	0.62
CC Tuition							1.00

Based on the economic assumptions above, the expected long-term annualized compound rate of return on investments is 5.50%. The expected annualized compound rate of tuition growth for universities is 4.00% for the next two years and then 6.00% thereafter. The expected annualized compound rate of tuition growth for community colleges is 2.00% for the next two years and then 6.00% thereafter. The Reasonable Rate was fixed at 0.02% for the first year with a mean yield of 2.40% thereafter.

Matriculation and Bias:

Starting in the year of matriculation, it is assumed that 76% of beneficiaries will attend a public university in Virginia, 7.6% will attend a private university in Virginia, 11.4% will attend a university in another state, and 5.0% will request a cancellation, transfer, or rollover to a savings plan. For legacy Prepaid529 contracts, Average Tuition (enrollment-weighted) for four-year public universities in Virginia was adjusted with a 9.4% load to add a bias for matriculation at more expensive schools. Weighted average tuition for two-year community colleges in Virginia was adjusted with a 1.0% load to add a bias for matriculation at more expensive schools. The highest tuition for a public university in Virginia was assumed to be 171% of weighted average tuition ($23,812/$13,949) as shown in Appendix D). Out-of-state students and contracts requesting a rollover are assumed to receive a benefit equal to the payments made on the contract plus interest at the composite reasonable rate of return. All TTP accounts are assumed to receive weighted average tuition for units redeemed after reaching their expected enrollment year.

Summary of Actuarial Assumptions
(continued)

Combination Contracts:

For combination contracts a portion of the remaining university and community college years are assumed to be paid each year. For combination contracts currently in payout with only university years or community college years remaining, the applicable remaining years are assumed to be paid.

Utilization:

It is assumed that participants will begin utilizing their accounts at the following rates, and then redeem up to two semesters of tuition per year until the account is depleted:

	Number of Semesters of Tuition Purchased*						
Years since Matriculation Year	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	11-12	13+
0	50%	60%	60%	80%	85%	85%	100%
1	15%	10%	20%	10%	8%	15%	
2	10%	15%	10%	5%	7%		
3	10%	5%	5%	5%			
4	5%	5%	5%				
5	5%	5%					
6	5%						

* For utilization, we assume that TTP accounts with fewer than 5 semesters of units will eventually purchase 5 units.

Forfeiture: It is assumed that contracts and accounts will be forfeited prior to the year of matriculation at a rate of 0.5% per year.

Expenses: The expenses included in the present value of future obligations are those relating to:

Annual Maintenance Expense per Legacy Prepaid529 Contract = $77.85
Annual Maintenance Expense per TTP Account = $20.76

The expense assumptions were developed from a cost analysis performed in 2021 by Virginia College Savings Plan staff. These expenses are assumed to increase annually at the rate of inflation plus 0.70%.

Summary of Actuarial Assumptions
(continued)

Legacy Prepaid529 contracts behind in their monthly payments: The monthly scheduled payment amount is increased by an amount that allows for the full payment under the contract by June of the year of expected matriculation.

There were 2,800 accounts that were in the process of being cancelled or would be cancelled within the next few months due to having reached the 10-year time limit. We assumed these accounts would be paid their Reasonable Rate account balance during the 2021-2022 fiscal year.

Rationale for Assumptions:

All of the actuarial assumptions with the exception of the investment return, the tuition growth rate, the reasonable rate, and the bias were based on the results of an experience study performed in 2014 (see the Experience Study report dated September 22, 2014).

The reasonable rate assumption was based on the current money market yield used to set the rate and forecasts of future short-term interest rates from a survey of economists published in the *June 2021 Blue Chip Financial Forecasts.*

The investment return assumption is set by the Board based on recommendations from Virginia529's investment consultant.

The tuition growth assumptions are also set by the Board. Milliman assisted Virginia529 staff in 2015 with a historical analysis of long-term tuition growth at public colleges in Virginia.

The bias assumption for Virginia public universities was increase from 8.0% to 9.4% based on the distribution of unit redemptions at the universities over the past 5 years and the relative tuition and fee amounts at these schools in 2021-2022.

Defined Benefit 529

Derivation of Average Tuition at Four Year Universities
Based on Fall 2020 Full-Time Equivalent Enrollment

School	Tuition and Fees 2021-2022	Fall 2020 FTE for In-State Undergraduates	Percent Distribution
Christopher Newport	$14,924	4,403	3.38%
George Mason	13,119	20,119	15.44%
James Madison	12,638	14,584	11.19%
Longwood	14,090	3,221	2.47%
Mary Washington	13,830	3,351	2.57%
Norfolk State	9,622	3,446	2.64%
Old Dominion	11,160	14,481	11.11%
Radford	11,542	6,426	4.93%
University of Virginia (2021, 2020, 2018)*	17,418	8,608	6.61%
University of Virginia (2019)	20,118	2,869	2.20%
UVA - Wise	11,161	1,208	0.93%
Virginia Commonwealth	15,028	18,114	13.90%
Virginia Military Institute	19,670	1,189	0.91%
Virginia Tech	14,175	21,669	16.63%
Virginia State	9,154	2,612	2.00%
William & Mary	23,812	3,985	3.06%
Total		130,285	100.00%
Average Tuition**	**$13,949**		

*Assumes that 2018, 2020, and 2021 students are 75% of total FTE for University of Virginia.

** The Average Tuition for purposes of determining the 2021-2022 TTP unit value was $13,884. This was based on preliminary data from SCHEV. Updates made to the tuition and fee rates after the June 15 TTP deadline are reflected in the Average Tuition amount of $13,949 shown in the table above and this amount was used as the basis for the actuarial valuation.

Defined Benefit 529

Derivation of Enrollment-Weighted Average Tuition and Mandatory Fees at Community Colleges Based on Fall 2020 Full-Time Equivalent Enrollment

School	Tuition and Fees 2021-2022	Fall 2020 FTE for In-State Undergraduates	Percent Distribution
Blue Ridge	$5,722	1,918	2.36%
Central Virginia	5,160	1,910	2.35%
Dabney S. Lancaster	5,040	621	0.76%
Danville	5,024	1,441	1.77%
Eastern Shore	5,120	384	0.47%
Germanna	5,240	4,064	4.99%
J Sargeant Reynolds	5,331	4,312	5.30%
John Tyler	5,120	4,582	5.63%
Lord Fairfax	5,051	3,590	4.41%
Mountain Empire	5,024	1,417	1.74%
New River	5,010	2,487	3.06%
Northern Virginia	5,936	25,908	31.83%
Patrick Henry	5,035	1,421	1.75%
Paul D. Camp	4,928	640	0.79%
Piedmont Virginia	5,109	2,516	3.09%
Rappahannock	5,151	1,470	1.81%
Richard Bland	8,704	1,070	1.31%
Southside Virginia	5,008	1,886	2.32%
Southwest Virginia	5,016	1,469	1.80%
Thomas Nelson	5,126	3,409	4.19%
Tidewater	5,931	9,096	11.17%
Virginia Highlands	5,024	1,298	1.59%
Virginia Western	5,443	3,178	3.90%
Wytheville	5,040	1,316	1.62%
Total		81,403	100.00%
Weighted Average Tuition and Fees	**$5,542**		

Defined Benefit 529

History of Average Tuition
at Four Year Universities and Community Colleges in Virginia

Academic Year	University Tuition and Fees	% Increase	Community College Tuition and Fees	% Increase
1988-1989	$2,377		$778	
1989-1990	2,544	7.0%	798	2.5%
1990-1991	2,702	6.2%	894	12.0%
1991-1992	2,985	10.5%	1,050	17.4%
1992-1993	3,357	12.5%	1,230	17.1%
1993-1994	3,659	9.0%	1,320	7.3%
1994-1995	3,789	3.6%	1,359	3.0%
1995-1996	3,949	4.2%	1,445	6.3%
1996-1997	4,002	1.3%	1,445	0.0%
1997-1998	4,095	2.3%	1,445	0.0%
1998-1999	4,217	3.0%	1,445	0.0%
1999-2000	3,721	(11.8%)	1,159	(19.8%)
2000-2001	3,793	1.9%	1,159	0.0%
2001-2002	3,843	1.3%	1,159	0.0%
2002-2003	4,122	7.3%	1,671	44.3%
2003-2004	5,033	22.1%	1,882	12.6%
2004-2005	5,559	10.5%	2,006	6.5%
2005-2006	5,990	7.8%	2,135	6.4%
2006-2007	6,529	9.0%	2,269	6.3%
2007-2008	6,966	6.7%	2,404	5.9%
2008-2009	7,562	8.6%	2,584	7.5%
2009-2010	7,912	4.6%	2,781	7.6%
2010-2011	8,803	11.3%	3,285	18.1%
2011-2012	9,507	8.0%	4,179*	27.2%*
2012-2013	9,856	3.7%	4,426	5.9%
2013-2014	10,225	3.7%	4,619	4.4%
2014-2015	10,797	5.6%	4,835	4.7%
2015-2016	11,409	5.7%	5,101	5.5%
2016-2017	11,961	4.8%	5,263	3.2%
2017-2018	12,494	4.5%	5,439	3.3%
2018-2019	13,210	5.7%	5,569	2.4%
2019-2020	13,395	1.4%	5,572	0.1%
2020-2021	13,636	1.8%	5,531	(0.7%)
2021-2022**	13,949	2.3%	5,542	0.2%

* Starting with the 2011-2012 year, Community College Tuition and Fees is measured as an enrollment-weighted average. Prior to that, a non-enrollment-weighted average was used. Enrollment numbers taken from SCHEV's website.

** The Average Tuition for purposes of determining the 2021-2022 TTP unit value was $13,884.

Compounded Increase in Average Tuition

Over last 5 years:	3.1%	1.0%
Over last 10 years:	3.9%	2.9%
Over last 15 years	5.2%	6.1%
Over last 20 years:	6.7%	8.1%
Over last 25 years:	5.1%	5.5%
Over last 30 years:	5.3%	5.7%

Defined Benefit 529

Cash Flow Projection
(amounts in millions)

Fiscal Year	Beginning Balance	Installment Payments*	Benefit Payments	Expenses	Investment Income	Ending Balance
2022	$3,234.0	$28.8	$287.7	$4.1	$158.5	$3,129.5
2023	3,129.5	24.3	222.1	3.7	155.4	3,083.4
2024	3,083.4	19.8	207.2	3.3	153.4	3,046.1
2025	3,046.1	16.1	200.8	3.0	151.7	3,010.1
2026	3,010.1	13.2	170.9	2.4	150.9	3,000.9
2027	3,000.9	10.8	159.5	2.1	150.8	3,000.9
2028	3,000.9	8.7	149.0	1.8	151.2	3,010.0
2029	3,010.0	6.7	133.4	1.6	152.3	3,034.0
2030	3,034.0	5.2	120.6	1.3	153.8	3,071.1
2031	3,071.1	4.1	107.7	1.1	156.4	3,122.8
2032	3,122.8	3.1	95.1	0.9	159.5	3,189.4
2033	3,189.4	2.3	82.2	0.8	163.6	3,272.3
2034	3,272.3	1.6	70.0	0.6	168.2	3,371.5
2035	3,371.5	1.0	60.7	0.5	173.8	3,485.1
2036	3,485.1	0.5	54.1	0.4	180.1	3,611.2
2037	3,611.2	0.1	45.3	0.3	186.9	3,752.6
2038	3,752.6	0.0	36.2	0.2	194.7	3,910.9
2039	3,910.9	0.0	26.6	0.1	203.3	4,087.5
2040	4,087.5	0.0	17.3	0.1	212.9	4,283.0
2041	4,283.0	0.0	10.1	0.0	223.4	4,496.3
2042	4,496.3	0.0	5.1	0.0	234.7	4,725.9
2043	4,725.9	0.0	2.5	0.0	246.8	4,970.2
2044	4,970.2	0.0	1.0	0.0	259.6	5,228.8
2045	5,228.8	0.0	0.3	0.0	273.2	5,501.7
2046	5,501.7	0.0	0.0	0.0	287.4	5,789.1

* Future installment payments for legacy contracts as of June 30, 2021.

Prepaid Tuition Benefits

For beneficiaries attending a Virginia public college, university, or community college, Prepaid529 will pay the full amount of in-state undergraduate tuition and all mandatory fees for a normal full-time course load for a general course of study on a semester-by-semester basis for the type of school and number of years purchased. Prepaid529 payments to in-state public schools will not exceed the actual cost of the in-state undergraduate tuition and mandatory fees. In 2019, the Virginia General Assembly passed legislation that included provisions for Prepaid529 contracts entered into prior to July 1, 2019. These provisions allow for payment of the “Minimum Benefit” (contract payments, accumulated at the reasonable rate of return), on a semester by semester basis, directly from Prepaid529 to qualified higher education institutions when it exceeds the normal payout from the program. The contract-holder also has the option to transfer the total amount of all payments, accumulated at the reasonable rate of return, to a Virginia529 savings program, and request a withdrawal from the respective program to pay for qualified higher education expenses.

For beneficiaries attending a Virginia independent (private) college or university, Prepaid529 will pay to the Virginia private school, including certain private career schools, the lesser of 1) the payments made on the contract plus the actual rate of return earned on the Fund or 2) the highest in-state undergraduate tuition and mandatory fees at a Virginia public school in the same academic year the benefits are used. All payments will be made directly to the school on a semester-by-semester basis following the school’s add-drop period. The student or his or her family is responsible for any additional expenses not covered by Prepaid529. The contract-holder has the option to transfer the total amount of all payments, accumulated at the reasonable rate of return, to a Virginia529 savings program and request a withdrawal from the respective program to pay for qualified higher education expenses.

For beneficiaries attending an out-of-state public or private college or university, Prepaid529 will pay the lesser of 1) the payments made on the contract plus interest at the composite reasonable rate of return or 2) the average in-state undergraduate tuition and mandatory fees at Virginia public schools for the same academic year the benefits are used. Payments will be made on a semester-by-semester basis from Prepaid529. The student or his or her family is responsible for any additional expenses not covered by Prepaid529. The contract-holder has the option to transfer the total amount of all payments, accumulated at the reasonable rate of return, to a Virginia529 savings program and request a withdrawal from the respective program to pay for qualified higher education expenses.

The reasonable rate of return tracks the quarterly performance of the Institutional Money Funds Index as reported in the Money Fund Monitor by iMoneyNet.