Expanded Family Planning Savings Modeling

A Model Estimating Costs and Savings for Colorado

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COLORADO **HEALTH** INSTITUTE

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In partnership with the Colorado Children's Campaign, the Colorado Health Institute (CHI) modeled the potential cost savings to the state of Colorado of a proposed state plan amendment (SPA) that would expand family planning services for people with incomes at or below 260% of the federal poverty level (FPL) who otherwise lack insurance coverage for family planning services (the eligible population).[1] This document describes the key findings, methods, assumptions, and data sources that CHI used in the model.

Key Findings

As a result of expanding access to family planning services to the eligible population, CHI has identified that the Child Health Plan Plus (CHP+) and Health First Colorado (the state's Medicaid program) could save $3,267,241 in 2021 after accounting for program expenses of expanding family planning services. Taking into consideration population growth and an inflation rate applied to potential costs averted and program expenses, the state could save $3,512,764 in year 2026, and $3,709,635 in year 2031.

Methodology, Assumptions and Data Sources

Research Question

The potential savings to the state were determined as described in the methodology below and guided by the following research question:

What are the short– (1 year), medium– (5 years), and long-term (10 years) potential costs and savings to the state of Colorado's public insurance programs — specifically the Child Health Plan Plus (CHP+) and Health First Colorado — as a result of expanding access to family planning services for people with incomes at or below 260% of the federal poverty level (FPL) who otherwise lack insurance coverage for family planning services?

CHI calculated potential cost savings to Health First Colorado and CHP+ using the formula:

$$Potential\ Cost\ Savings\ to\ the\ State = Potential\ Costs\ Averted - Program\ Expenses$$

Potential Costs Averted

Potential costs averted are defined as the prenatal and other obstetric care (mother's care), and child medical and dental care expenses from birth through age five (pediatric care), that would be saved assuming that 100% of unintended pregnancies among women in the eligible population who utilize

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[1] Based on 2021 U.S. Federal Poverty Guidelines, the income for an individual at 260% FPL in 2021 is $33,488.

family planning services would have been prevented had there been access to family planning services. CHI used the following equation to determine the costs averted:

$$Costs\ Averted = Likely\ Beneficiaries \\ \times [(Total\ Cost\ of\ Mother's\ Care + Total\ Cost\ of\ Pediatric\ Care) \\ \times State\ Portion\ of\ Federal\ Medical\ Assitance\ Percentage]$$

Likely Beneficiaries

The number of likely beneficiaries was calculated using the following equation:

$$Likely\ Beneficiaries \\ = Total\ Number\ of\ Women\ in\ the\ Eligible\ Population \times Birth\ Rate \\ \times Unintended\ Pregnancy\ Rate \times Take\text{-}up\ Rate\ for\ Family\ Planning\ Services$$

Note that the number of likely beneficiaries is used to represent both the number of women in the eligible population who had an unintended pregnancy that could have been prevented had there been access and utilization to family planning services, as well as the number of births that would have otherwise occurred, assuming a singleton birth for each woman.

Total Number of Women in the Eligible Population

To estimate the total number of women in the eligible population, CHI analyzed data from the 2019 American Community Survey using the following parameters:

- Women who have legal documentation but are uninsured, ages 19–44, with household incomes at 133%–200% FPL
- Women who have legal documentation but are uninsured, ages 19–44, with household incomes at 201%–260% FPL

The ACS contains variables on citizenship but not on whether a person has legal documentation status. CHI updated its method for estimating undocumented immigrants in Colorado in December 2015. The updated method is based on a Pew Hispanic Center report describing the characteristics of the undocumented immigrant population in the U.S. CHI created a logistic regression model of the likelihood that a noncitizen was an undocumented immigrant based on these characteristics. For example, Pew's 2006 report estimated that 49.0% of undocumented immigrants in the United States are adult men, compared with 43.5% of noncitizens who have legal documentation. Therefore, CHI estimated a noncitizen was 12.5% more likely to lack legal documentation if he is an adult male — the difference between 49.0% and 43.5%. The full model was based on age, sex, employment status and country of origin.

For this cost savings model, CHI assumed that women younger than 19 would already have access to family planning services through primary care services covered by the CHP+ program (children's eligibility) and thus were excluded from the eligible population. The lower bound of 133% of FPL was chosen because women with incomes below this threshold have access to family planning services through Health First Colorado. Women were also separated by FPL categories due to potentially varying cost of mother's care and pediatric care by FPL. To determine income eligibility under this parameter, CHI counted women in single-person households as a household of two. This approach aligns with

eligibility criteria for The New Family Planning Eligibility Group established under Section 2303 of the Affordable Care Act (ACA).

Birth Rate

An average birth rate of 5.7% was applied to the total number of women in the eligible population to estimate the number of births that would occur in a year. The rate is a weighted average that was derived from the crude rates of live births for women 18–44 years old as reported in the 2019 Live Births Colorado Health Information Dataset (CoHID) maintained by the Colorado Department of Public Health and Environment (CDPHE).

Unintended Pregnancy Rate

To determine the number of births that were unintended, an unintended pregnancy rate of 36.3% was applied. The unintended pregnancy rate was defined as the percentage of women who indicated their pregnancy intent as later, never, or not sure in the 2019 Colorado Pregnancy Risk Assessment Monitoring System (PRAMS) estimates.

Take-Up Rate for Family Planning Services

A take-up rate for family planning services of 83.0% was used to account for the fact that, even if family planning services were available, not all women would have utilized those services. This take-up rate was determined by summing the percentage of women who reported being sexually active and using contraception methods of either: long-active reversible contraceptives (LARCs), a pill, patch, ring or shot, or sterilization in the 2019 Colorado Behavioral Risk Factor Surveillance System (BRFSS). These contraceptive methods were included as a proxy for the take-up rate as they closely matched family planning services that would be available under the proposed SPA. Additionally, the BRFSS was used as the take-up rate for likely beneficiaries in this scenario as CHI assumed that those who had an unintended pregnancy were sexually active and thus may have a similar take-up rate of family planning services to the population queried in the BRFSS.

Total Cost of Mother's Care

The cost of mother's care includes the cost of prenatal care and the average per capita payment of $7,854 for deliveries and associated gestational/post-partum expenditures as reported by the Colorado Department of Health Care Policy and Financing (HCPF) for calendar year 2018 (the latest year available).

The cost of prenatal care was determined from the state's 2020–21 unadjusted per capita expenditures for prenatal care from the Children's Basic Health Plan's (CBHP) Exhibit C6: Expenditure Calculations by Eligibility Category (CBHP is synonymous with CHP+ for expenditure reporting). Reported expenditures for FPL categories of 0%–205% and 206%–260% were used accordingly. A 93.2% take-up rate for prenatal care was applied to account for the fact that not all women use prenatal services. The take-up rate for prenatal care was derived from the percentage of women ages 18–44 years old who had a live birth and reported having their first prenatal visit during any month of pregnancy as reported in the 2019 Live Births CoHID.

Total Cost of Pediatric Care

The cost of pediatric care includes the summed cost of medical care and dental care for children ages 0–1 and 2–5, (by FPL categories of 0%–205% and 206%–260%). These figures were reported in

CBHP's 2020-21 unadjusted per capita expenditures for medical care and dental care in Exhibit C6: Expenditure Calculations by Eligibility Category. The take-up rates used for medical care and dental care were 94.0% and 59.2%, respectively. These were determined by the percentage of children ages 0–5 who had a preventive care visit in the past year, and the percentage of children ages 0–5 who had a dental visit in the past year as reported by the 2019 Colorado Health Access Survey.

State Portion of Federal Medical Assistance Percentage (FMAP)

CHI's understanding is that expenditures figures in HCPF's budget documents reflect *total* expenditures regardless of the source of funding (federal or state). Therefore, to determine the state's portion of potential costs averted, the 50.0% FMAP (for Medicaid) was applied to the total cost of mother's care and the total cost of pediatric care for the 133–200% FPL group. The 65.0% FMAP (for CHP+) was applied to total cost of mother's care and total cost of pediatric care for the 201–260% FPL group (making the state portion 35.0%).

Program Expenses and Cost to State

Under the proposed state plan amendment, family planning services would include:

- Contraception, as defined in Section 2-4-401 (1.5)
- Health care or counseling services focused on preventing, delaying, or planning for a pregnancy, which must include medically necessary evaluations or preventive services, such as tobacco utilization screening, counseling, testing and cessation services
- Follow-up visits to evaluate or manage problems associated with contraceptive methods
- Sterilization services, regardless of sex
- Cervical cancer screening and prevention
- Infertility assessments
- Diagnosis, treatment of, or medication to prevent a sexually transmitted infection, or other infection, or condition of the urogenital system

Program expenses are therefore defined as the cost of expanding family planning services, outlined above, to the eligible population. Notably, infertility assessment is not currently a covered benefit under Health First Colorado and was therefore a separate cost that was accounted for. HPV vaccination was also included as a separate cost as a proxy for cervical cancer screening and prevention.

CHI used the following formula to determine program costs:

$$\begin{aligned} Program\ Expenses \\ = (Likely\ Beneficiaries\ \times\ Per\ Capita\ Expenditures\ for\ Family\ Planning\ Services) \\ + (Total\ Expenditures\ for\ Infertility\ Assessment\ ) \\ + (Total\ Expenditures\ for\ HPV\ Vaccination) \end{aligned}$$

To determine the cost to the state, the total program expenses were multiplied by the state portion of the federal medical assistance percentage (FMAP).

Likely Beneficiaries

CHI first determined the total number of men and women in the eligible population by analyzing data from the 2019 American Community Survey using the following parameters:

- Women who have legal documentation but are uninsured, ages 19–44, with household incomes at 133%–200% FPL
- Women who have legal documentation but are uninsured, ages 19–44, with household incomes at 201%–260% FPL
- Men who have legal documentation but are uninsured, ages 19–44, with household incomes at 133%–260% FPL

The ACS contains variables on citizenship but not on whether a person has legal documentation status. CHI updated its method for estimating undocumented immigrants in Colorado in December 2015. The updated method is based on a Pew Hispanic Center report describing the characteristics of the undocumented immigrant population in the U.S. CHI created a logistic regression model of the likelihood that a noncitizen was an undocumented immigrant based on these characteristics. For example, Pew's 2006 report estimated that 49.0% of undocumented immigrants in the United States are adult men, compared with 43.5% of noncitizens who have legal documentation. Therefore, CHI estimated a noncitizen was 12.5% more likely to lack legal documentation if he is an adult male — the difference between 49.0% and 43.5%. The full model was based on age, sex, employment status and country of origin.

For this cost savings model, CHI assumed that men and women younger than 19 would already have access to family planning services through primary care services covered by the CHP+ program (children's eligibility) and thus were excluded from the eligible population. The lower bound of 133% of FPL was chosen because men and women with incomes below this threshold have access to family planning services through Health First Colorado. Women were also separated by FPL categories due to potentially varying costs of family planning-service expenditures by FPL. To determine income eligibility under this parameter, CHI counted women in single-person households as a household of two. This approach aligns with eligibility criteria for The New Family Planning Eligibility Group established under Section 2303 of the Affordable Care Act (ACA).

A take-up rate for family planning services was then applied to the total number of women and men in the eligible population to estimate the number of people who would be likely to utilize services. For women, a take-up rate of 44.7% was used. This value is the percentage of women nationally who report using either: female sterilization, oral contraceptives, LARCs, or a ring/patch, and does not include those who reported using male condoms, male sterilization, and all other contraceptive methods in the Centers for Disease Control and Prevention's (CDC) Brief *Current Contraceptive Status Among Women Aged 15–49 : United States, 2015–2017*. (Note that in the CDC's brief, women who reported using more than one method were classified according to the most effective method used).

For men, an 8.8% take-up rate for family planning services was used which is the percentage of Title X clinic users who are male as reported in the CDC's 2016 press release. (Note that this take-up rate may not be an accurate representation of the number of men who use family planning services as discussed in the limitations section.)

Per Capita Expenditures for Family Planning Services

A per capita cost of $404 for family planning services was used. CHI determined this value to be a reasonable proxy of per capita costs for family planning services as it is the cited value of a per client cost from CDPHE's Family Planning Purchase of Services Increase FY 2019-20 Change Request and derived using Guttmacher Institute's Health Benefits and Cost Savings of Publicly Funded Family Planning calculator.

Total Expenditures for Infertility Assessment

The per capita cost used for infertility assessment for women was $890. This is the median per-person cost for no cycle-based treatment and could include tests or surgical procedures as reported in a study by Katz, Showstack, Smith, et al (2010). For men, a per capita cost of $775 was used. This is the summation of the mid-range costs for a new visit to a reproductive endocrine fertility specialist, fertility–related blood tests, and a semen analysis as reported by the Advanced Fertility Center of Chicago (accessed on February 15, 2021).

A take-up rate for infertility assessment was applied to the likely beneficiaries to determine the number who would utilize this service. The take-up rate was reported as 12.7% for women based off 2015-2017 statistics on infertility from the CDC of the percentage of women aged 15–49 who ever used infertility services. For men, the take-up rate used was 9.0% based on the National Institute of Health's estimate for how many men experience a fertility problem. Note that both take-up rates are estimated based on lifetime reported rates but are then applied to the annual time-horizon perspective of the model.

Total Expenditures for HPV Vaccination

The per capita cost used for HPV vaccination was $168. This value is from HCPF's January 2021 Fee Schedule and is the same for CPT codes 90649 (Gardasil vaccine) and 90650 (Cervarix vaccine).

CHI further analyzed 2019 ACS data to estimate the percentage of likely beneficiaries who are under 26 years of age. This was done to account for CDC's HPV Vaccine Recommendations of who should receive the HPV vaccine and at which age. A take-up rate for HPV vaccination was then applied.

The take-up rate for vaccination was determined to be 35.3% for women (ages 18–26) and 9.0% for men (of the same age) as reported in the CDC's National Center for Health Statistics Data Brief No. 354. Note that both take-up rates are estimated based on lifetime reported rates but are then applied to the annual time-horizon perspective of the model.

Federal Medical Assistance Percentage (FMAP)

To determine the portion of program costs that the state would be responsible for, an 80% FMAP was used and therefore the state's portion of costs would be 20%.

While it is possible that, through Colorado's negotiations, a more cost-effective FMAP would be obtained, a 20% value was used as a conservative estimate based off of Maryland's SPA #18-0005, which expands program eligibility for their Family Planning Program and was estimated to have an 88% FMAP.

Five and Ten-Year Projections

To determine potential cost-savings to the state at five and ten years, CHI utilized the same methodology described above with the following exceptions:

- To determine the number of likely beneficiaries, a population growth rate factor was derived from data provided by the State Demography Office for both men and women age 15–44. By 2026, the population is expected to grow 5.66% for women of this age group and 6.11% for men of this age group. By 2031, the population of this age is expected to grow by 10.56% for females and 11.65% for males.
- After looking at historical data on Colorado's unintended pregnancy rate, CHI opted to utilize the same unintended pregnancy rate of 36.3% for both 2026 and 2031. By expanding the program there may be a decline in the unintended pregnancy rate. However, based on historical data from the Colorado PRAMS, the unintended pregnancy rate has remained relatively unchanged over the past two decades. Additionally, given the relatively small proportion of the state's population who would become eligible for family planning services there would likely be only a small difference in the state's unintended pregnancy rate.
- To account for inflation of costs, a rate of 1.8% was applied to both averted costs and program expenditures in year 2026. This was determined from the 2019–20 change in the consumer price index for medical care as reported by the Bureau of Labor Statistics (BLS). For 2031 averted costs and program expenditures, a 2.8% rate was applied and is the average annual rate of the consumer price index for medical care over the last 10 years (2010–2020) as reported by the BLS.

All other factors, including take-up rates and FMAP were kept constant for the purpose of these five- and ten-year projections.

The estimated savings in 2026 and 2031 do not represent cumulative savings accrued in the five-year period between 2021 and 2026, or the ten-year period between 2021 and 2031. Rather, they are point-in-time estimates of savings to the state in the years 2021, 2026, or 2031, adjusted for inflation.

Limitations

The model has numerous limitations that could influence the outcome of potential savings to the state. Potential cost savings to other social programs were not considered and the model is limited to savings to Health First Colorado and CHP+.

CHI did not include potential costs averted from treatment of avoided sexually transmitted infections, nor include different take-up rates and effectiveness of different contraceptive methods. The total cost of mother's care may also differ due to HCPF's bundled payment program for maternity care.

The 8.8% take-up rate for family planning services that was used for men may not be an accurate representation of the number of men who use family planning services. This value consists of the

percentage of Title X clinic users who are male and therefore may not be representative of the eligible population.

The per capita expenditures for infertility assessment are also a limitation of this model. First, the specifics as to what will be covered under "infertility assessment" are still being negotiated for inclusion of the SPA. Second, the model utilizes charges and out-of-pocket costs as proxies which may differ from a cost to a payer – infertility services are often not covered by insurance and thus are difficult to estimate. As reported by the Advanced Fertility Center of Chicago, out-of-pocket costs can also differ significantly by fertility clinic and can be dependent on the level of competition that may exist between fertility clinics in an area. Costs can further be influenced if infertility treatment mandates exist for health insurance plans in a state.

The take-up rate used for infertility assessment and HPV vaccination (women and men) also poses limitations as these figures are reported over a lifetime and used as a proxy for an annual figure for this model.

HPV vaccination was also used as a proxy for cervical cancer screening and prevention as listed in the proposed SPA, however actual cost of these services may be greater.

For questions regarding this analysis, please contact Kimberly Phu at KPhu@ColoradoHealthInstitute.org.