

Expanding Evidence-Based Home Visiting in Tennessee: Highlights of a Pay for Success Feasibility Study

MARCH 2017

PFS

**PAY FOR
SUCCESS**

With support from the Institute for Child Success (ICS), the Tennessee Commission on Children and Youth (TCCY) studied the feasibility of using Pay for Success (PFS) financing, an innovative mechanism, to improve outcomes for its youngest children. PFS financing, also called “Social Impact Bonds,” can bring new resources, new partners, and a new focus on outcomes to early childhood services. Tennessee was one of four jurisdictions selected to receive technical assistance from ICS in 2016 through the U.S. Social Innovation Fund’s PFS program. The feasibility study focused on the possibility of expanding three evidence-based home visiting programs—Healthy Families America (HFA), Parents as Teachers (PAT), and the Nurse-Family Partnership (NFP)—for families in need.

(by)
Mary C. Garvey,
**Institute for Child
Success**

The study concluded that Tennessee could feasibly expand home visiting using PFS financing to improve outcomes for low-income mothers and their children. HFA produces at least two PFS-suitable outcomes and could expand once the program launches a new data system and builds the capacity of local service providers to manage to outcomes. PAT demonstrated strong intermediate outcomes and, with additional data on longer-term “impact outcomes” that can be measured in Tennessee, could consider expansion under PFS in the future. NFP produces at least three outcomes in Tennessee that meet the criteria for PFS financing, and research indicates that the benefits of investing in NFP significantly exceed the costs. With TennCare as a possible outcome payor, Tennessee could use PFS financing to expand NFP in six high-need counties, including Shelby County where Le Bonheur Children’s Hospital currently implements the program.

Because the NFP is most immediately ready for PFS financing (having been expanded with PFS financing in South Carolina), the remainder of this Executive Summary focuses primarily on NFP. This Summary accompanies a presentation of the feasibility study findings. Note that neither provides the sum total of the feasibility study, which included multiple rigorous analyses and deliverables.

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(the need)

NUMBER OF FAMILIES IN NEED

Too few families receive home visiting services in Tennessee. In 2014, there were 81,602 live births in Tennessee.¹ More than half of those births were to women who were in Tennessee’s Medicaid program, TennCare— women considered high-risk and likely to benefit greatly from home visiting services.² Yet in 2014, Tennessee’s Evidence Based Home Visiting (EBHV) programs served only 1,221 women, leaving more than 44,000 women unserved.³ This lack of access to needed services has resulted in an array of poor prenatal and maternal outcomes. One example is the rate of preterm birth in Tennessee. In 2016, Tennessee ranked 45 out of the 50 states for preterm birth and was given a grade of “D” for premature births by the March of Dimes.⁴

The Tennessee Commission on Children on Youth in partnership with the Tennessee Department of Health saw an expansion of evidence-based home visiting programs as a solution to the state’s poor prenatal and maternal outcomes.

(feasibility of the NFP for PFS financing in TN)

PFS financing addresses both the need to scale up proven programs and the scarcity of government funds to pay the upfront costs of expansion. PFS financing involves a partnership in which philanthropic funders and private “impact investors”—not governments—often provide the initial capital to expand these programs. Service providers, usually nonprofits or public agencies, deliver the actual program services. An outcomes payor, usually the government, pays for the outcomes only if an impartial evaluator determines that the program has achieved agreed-upon measures of success. A PFS project also increases accountability for government spending and uses public-private partnerships to achieve the state’s goals. It is one tool available for jurisdictions to expand programs that can benefit families and children.

OUTCOMES AND MEASURABILITY

The evidence behind the NFP is based on decades of rigorous research demonstrating that the program produces multiple positive outcomes. We found that the NFP has been shown to reduce child maltreatment, preterm births, injury-related visits to the Emergency Room, closely spaced second births, and youth crime.

Our review of the relevant literature found that *at least* three of the NFP’s outcomes are a good fit for a PFS financing structure in Tennessee:

1. Reduced subsequent births within 24 months (healthy birth spacing)

¹ The Centers for Disease Control and Prevention (CDC), National Vital Statistics Reports (NVSr), Vol. 64, No. 12: Births: Final Data for 2014, December 23, 2015.

² Birth Statistical System 2014, Tennessee Department of Health; Division of Policy, Planning, and Assessment

³ Tennessee Department of Health, Starfish PAT Program, Knox County PAT Program

⁴ 2016 Premature Birth Report Card. <<http://www.marchofdimes.org/materials/premature-birth-report-card-tennessee.pdf>>

2. Reduced Emergency Room visits and hospitalization due to acute injury
3. Reduced preterm first births

All three outcomes can be adequately measured in Tennessee. Healthy birth spacing and reduced preterm first births are measured using the Tennessee Birth Statistical File. Emergency room visits are measured using the Tennessee Hospital Discharge Database.

COSTS AND BENEFITS

The NFP produces benefits for families that far exceed the costs. The most recent cost-benefit analysis of NFP (Ted Miller, 2016) shows that for every \$1.00 invested in Tennessee, the program goes on to yield \$5.90 worth of benefits.⁵ This analysis also states that we can expect an estimated net benefit of \$37,160 per family in Tennessee.⁶ Two other cost-benefit analyses completed by the Rand Corporation (1998)⁷ and the Washington State Institute for Public Policy (2012)⁸ yielded similar results, putting the net benefit per family at \$17,180 and \$18,885 respectively. The studies also calculated the return on each \$1.00 invested to be between \$1.26 and \$2.89, increasing as a family's risk factors increased.⁹

While we know that there are economic benefits for participating families, such as increased wages for parents and increased education for former child participants, these economic benefits are not limited to program participants. The communities where the NFP expands also experience benefits in the form of increased employment and wages, and an overall surge in economic activity.¹⁰

A FEASIBLE EXPANSION PLAN

When identifying the counties for a NFP expansion, we considered both need and strategic location. The NFP already serves families in Shelby County via Memphis-based Le Bonheur Children's Hospital. In addition, the Tennessee Department of Human Services is funding a pilot in Northeast Tennessee that, as of January 2017, serves families in eight counties—Carter, Greene, Hancock, Hawkins, Johnson, Sullivan, Unicoi, and Washington. We assessed need according to the number of first-time mothers receiving TennCare, and decided to focus on the following six counties:¹¹

1. Shelby
2. Davidson
3. Knox
4. Hamilton
5. Rutherford
6. Sumner

The map below shows the proposed NFP expansion locations and the current pilot sites.

⁵ Miller, Ted R. Societal Return on Investments in NFP Services in Tennessee. October 24, 2016. (Unpublished).

⁶ Miller, ROI.

⁷ Lynn A. Karoly et al. Investing in our Children: What We Do and Don't Know About the Costs and Benefits of Early Childhood Intervention. Rand Corporation. 1998.

⁸ Washington State Institute for Public Policy. Benefit-Cost Results for NFP for low-income families. Benefit-cost estimates updated July 2015. Literature review updated April 2012.

⁹ Rand 1998 and WSIPP 2012 studies.

¹⁰ Bartik, Timothy, Investing in Kids (2011), p 81

¹¹ While Montgomery County—home of Tennessee's Fort Campbell—also met the criterion for high need, it was not included as an expansion site. The transient nature of the heavily military-involved population would impede the ability to make a lasting impact.



An expansion in Shelby County would benefit from the implementation infrastructure already in place at Le Bonheur Children’s Hospital. Sumner and Rutherford counties are adjacent to Davidson County, the location of Tennessee’s metropolitan city, Nashville. It is possible that Sumner and Rutherford counties could benefit from any existing infrastructure in Davidson County.

The cost of this expansion is approximately \$15 million for one cohort (1,950 families), which would be \$45 million for three cohorts (5,850 families) over the course of 5.5 years.

IMPACT OF EXPANDING THE NFP

Based on this plan for expansion, we estimate that an additional 1,950 families per year can be served by expanding the NFP across the aforementioned six counties in Tennessee. Using data on impact found in the research, we project that for each cohort there will be a 40% reduction in subsequent births within 24 months, a 39% reduction in Emergency Room visits and hospitalizations, and a 14% reduction in preterm first births.¹² The chart below details these projections.

Outcome	Baseline	Projected Impact Per Cohort
Reduction in subsequent births within 24 months	13.3%	40% reduction resulting in an estimated 103 fewer cases (out of 259 estimated cases)
Reduced ER visits and hospitalizations due to acute injury	260 per 1,000 live births or 26%	39% reduction resulting in an estimated 198 fewer cases (out of 507 estimated cases)
Reduced preterm first births	10.5%	14% reduction resulting in 29 fewer preterm first births (out of 205 estimated cases)

¹² Miller, Ted R. Life Status and Financial Outcomes of NFP in Tennessee. October 24, 2016. (Unpublished).

The 14% reduction in preterm first births may seem relatively low. However, considering that the annual societal cost of preterm births in the United States is \$26 billion,¹³ even a relatively small reduction in the rate of incidence results in significant benefits.

POTENTIAL FINANCING STRUCTURE

Investors could finance the implementation of the NFP over 5.5 years at a total cost of \$45 million for nearly 6,000 families. Alternatively, a more affordable financing structure would happen over the same time period, but serving 3,900 families for \$30 million.¹⁴ In each case an independent evaluator would be able to assess results of the preterm birth outcome by the 3.5-year mark. The healthy birth spacing and Emergency Room visits outcome could be measured at the 5.5-year mark. Thus, possible payment points for an outcome payor are at the end of year four, and at the end of year six.

(conclusion)

The expansion of home visiting using PFS financing in Tennessee is feasible. With the upfront funding from funders and/or investors and the commitment of an outcome payor, the NFP could expand across six counties, serving almost 6,000 additional families in need. Other home visiting models could be ready for expansion through PFS financing in the future.

CONTACT

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¹³ The Impact of Premature Birth on Society. <<http://www.marchofdimes.org/mission/the-economic-and-societal-costs.aspx>> October 2015.

¹⁴ This alternate financing structure serves only half of the calculated need for the first 2 cohorts (975 families per cohort), and the full need (1,950 families) for the third cohort. Thus the impact would not be maximized.

EXPANDING HOME VISITING TO IMPROVE CHILD OUTCOMES: TENNESSEE PAY FOR SUCCESS FEASIBILITY STUDY HIGHLIGHTS

March 2017

This study was conducted by the Tennessee Commission on Children and Youth in partnership with the Institute for Child Success.

This presentation provides a mere snapshot of multiple rigorous analyses that constitute the study.

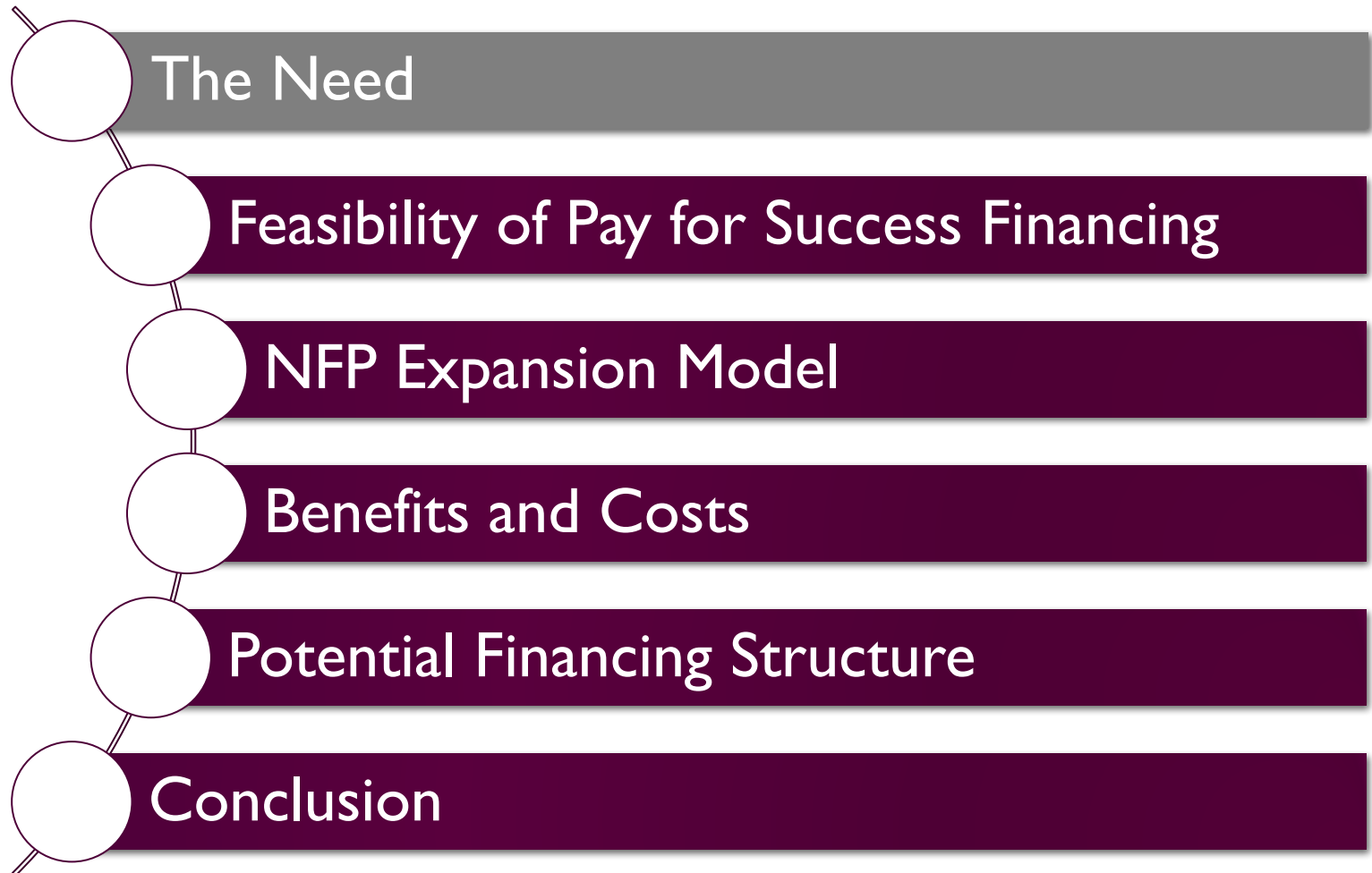


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Roadmap



Outcomes to Improve for a More Prosperous Tennessee

Preterm Births

Low Birth Weight

Infant Mortality

Maternal Smoking

Teen Pregnancies

Overall Poverty

Child Abuse

Binge Drinking

Drug Use

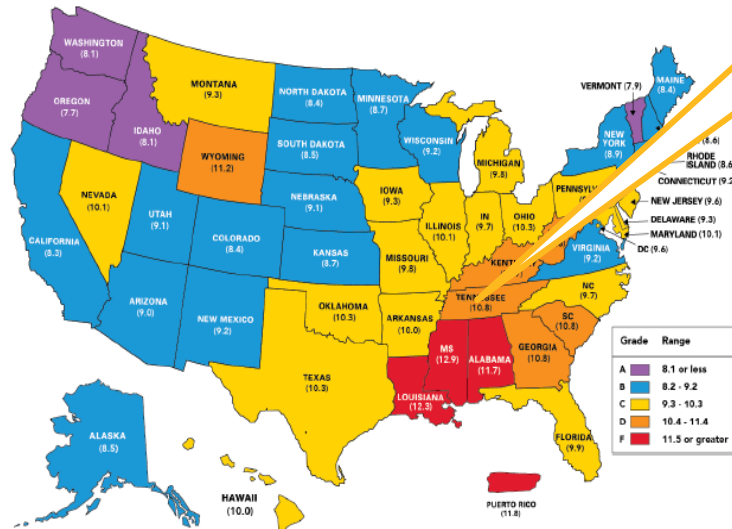
High Rates of Preterm Births in Tennessee

2015 PREMATURE BIRTH REPORT CARD

	Preterm Birth Rate	Grade
United States	9.6%	C

The March of Dimes Prematurity Campaign aims to reduce preterm birth rates across the United States. Premature Birth Report Card grades are assigned by comparing the 2014 preterm birth rate in a state or locality to the March of Dimes goal of 8.1 percent by 2020. The Report Card also provides city or county and race/ethnicity data to highlight areas of increased burden and elevated risks of prematurity.

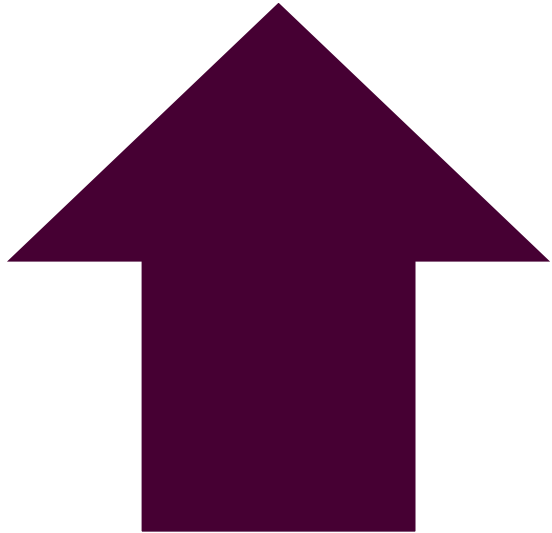
PRETERM BIRTH RATES & GRADES BY STATE



Tennessee
Grade: D
Bottom 10 states
in the country

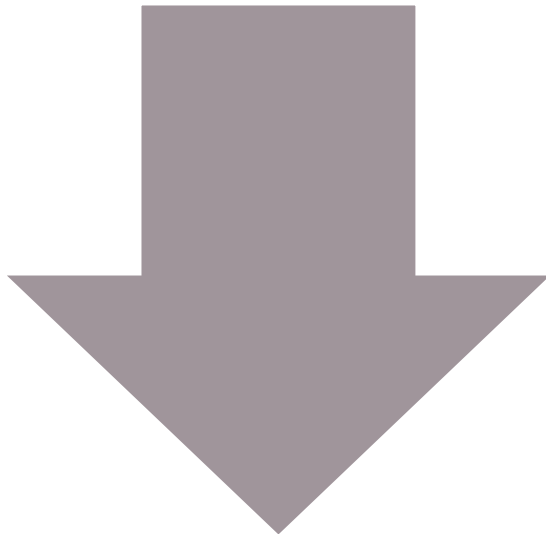
- Greatest contributor to infant death
- Leading cause of long-term neurological disabilities in children
- US annual cost: \$26 billion

Home Visiting = A Solution



INCREASED

Kindergarten readiness,
Economic independence of
mothers, Education rates of
mothers



REDUCED

Child maltreatment, Preterm
births, Injury-related visits to
the ER, Closely spaced 2nd
births, Youth crime, Low birth
weight infants

Evidence-Based Home Visiting Programs in Tennessee

Healthy
Families
America



Parents as
Teachers



Nurse-
Family
Partnership



Healthy Families America

Created for families at risk for Adverse Childhood Experiences, such as child maltreatment

Services begin prenatally or right after birth and end between ages 3 and 5

8 service providers in Tennessee

896 new families served in 2015



Parents as Teachers

Created for families in need, such as immigrants, low-income, teen, and first-time parents

Serves families from the prenatal stage through Kindergarten

4 service providers in Tennessee

Served 260 new families in 2015



Parents as
Teachers

Nurse-Family Partnership

Designed for low-income first-time moms

Enrollment prior to 28 weeks of pregnancy; serves the family until the child is 2

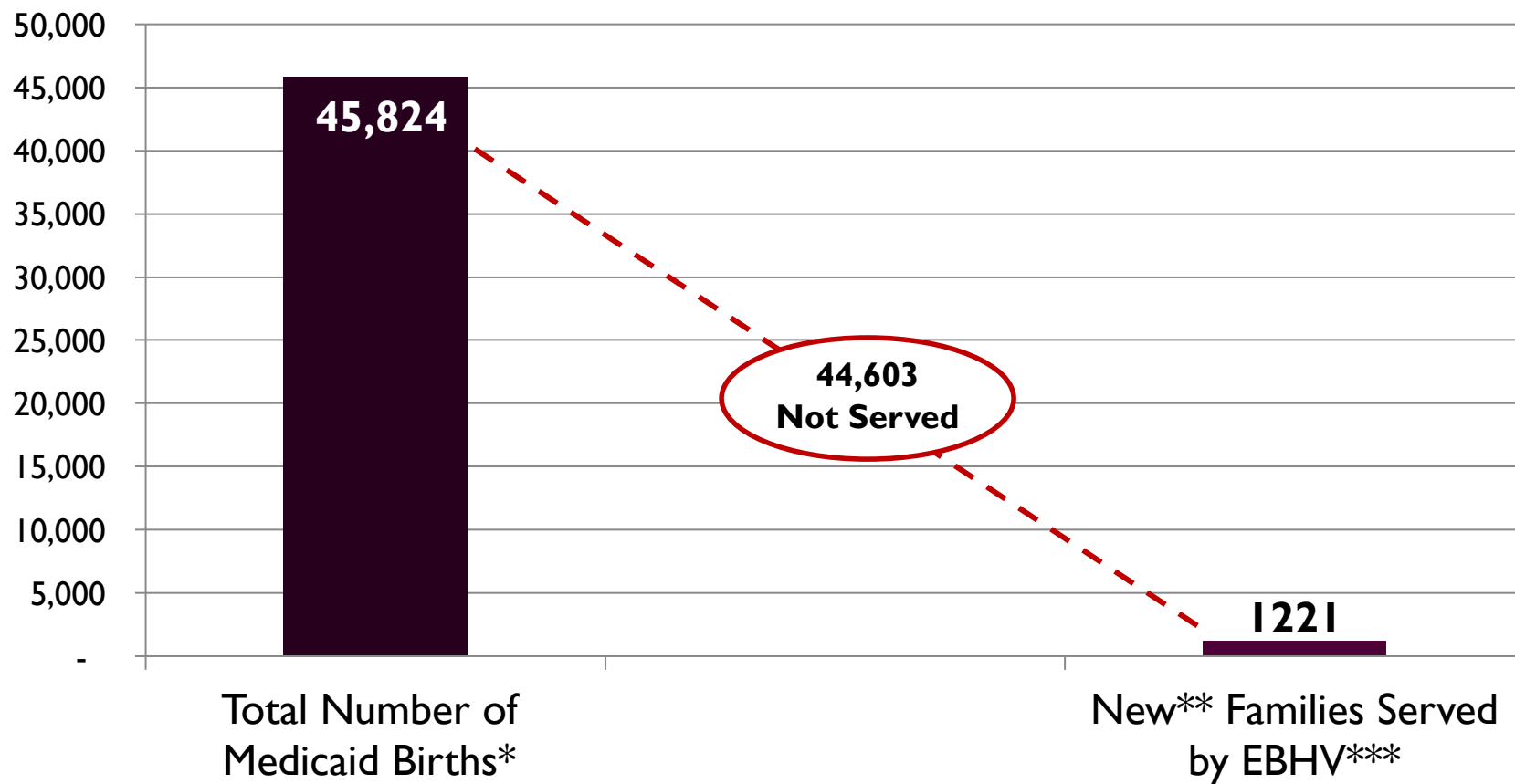
Weekly home visits by a Registered Nurse

Multiple service providers across 9 counties in Tennessee

Served 64 new families in 2015



Too Few Families Receive Home Visiting Services in Tennessee

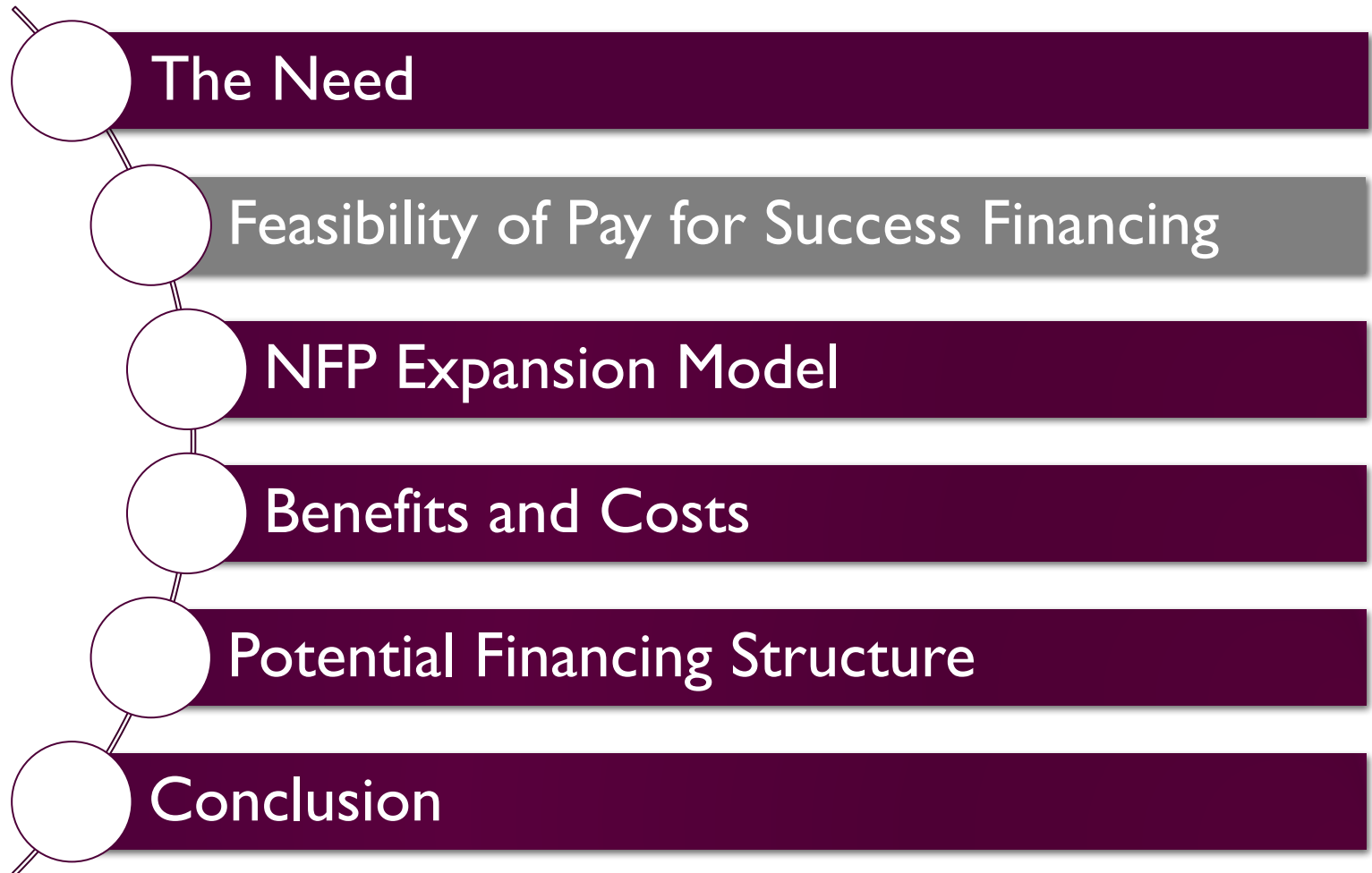


* 2014 Data; TennCare NAS Data <http://tn.gov/assets/entities/tenncare/attachments/TennCareNASData2014.pdf>

** New families are defined as those who did not receive services in the prior year

*** Tennessee Department of Health, Starfish PAT Program, Knox County PAT Program

Roadmap



Can Tennessee Fund The Expansion of Home Visiting Through Pay for Success?

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Tennessee Commission on Children and Youth was competitively selected to receive federally funded technical assistance from Institute for Child Success

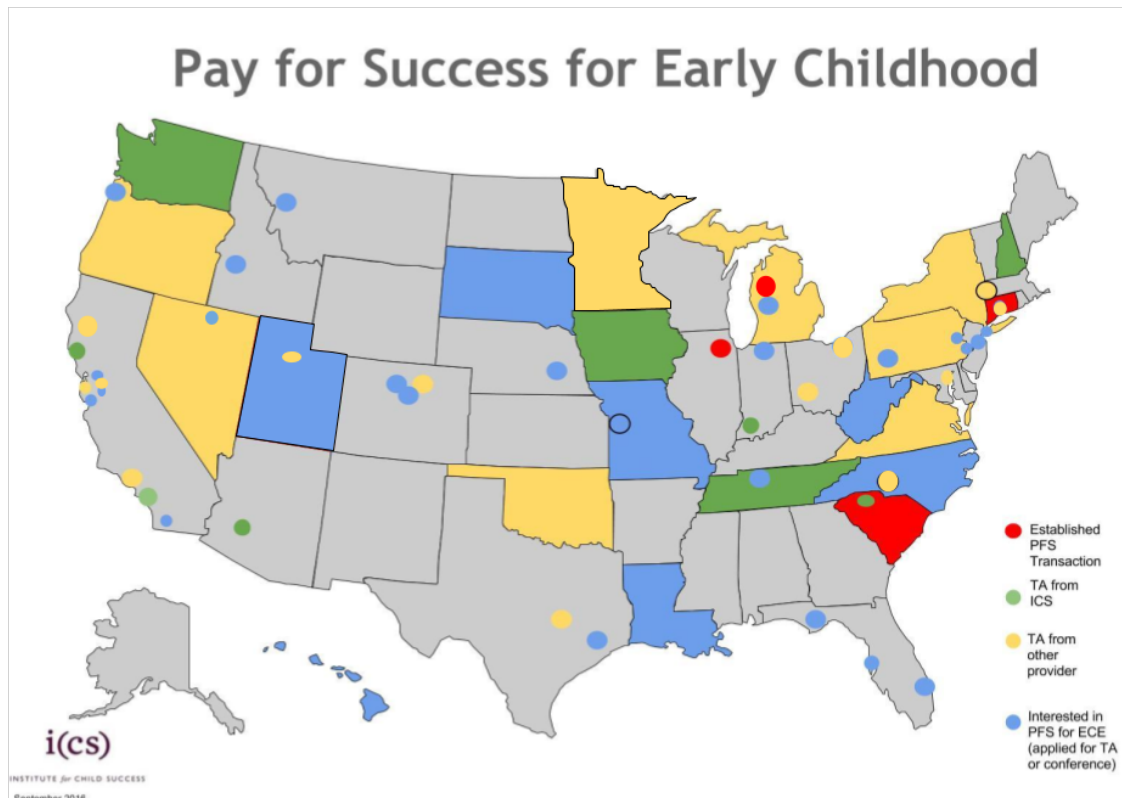


10-month feasibility study

- Outcome Analysis
- Baseline Data Analysis
- Cost-benefit Analysis
- Expansion Plan

PFS: A New Way to Expand Preventive Programs

- ✓ Pay for Success is a new contracting and financing mechanism based on outcomes



*More than 50 U.S.
jurisdictions pursuing or
using PFS to fund early
childhood programs*

Key Features of Pay for Success Financing



Government contracts to pay for agreed-on, measurable RESULTS



An impartial evaluator assesses whether results are achieved



Service providers expand effective programs with support from foundations or impact investors, who can get a modest return on investment

Assessing Outcomes for Pay for Success

1

There must be sufficient **EVIDENCE** to persuade investors to invest.

2

It must truly be an **OUTCOME**.

3

The outcome must occur in a **TIMEFRAME** that investors will accept.

PFS Feasibility of Home Visiting Programs

Nurse-Family Partnership

- PFS-suitable outcomes; NFP will be the focus of the remainder of our feasibility study.

Health Families America

- PFS-suitable outcomes, but must finish implementation of new data system and build capacity of local service providers to manage to outcomes.

Parents as Teachers

- Strong intermediate outcomes found in research, but need additional data on longer-term “impact outcomes” that can be measured in Tennessee.

NFP Outcomes Found in Research

More Economically Independent Mothers

Fewer Preterm Births

Fewer Injury-Related Visits to the ER

Reduction in Child Maltreatment

Fewer Closely Spaced 2nd Births

Reduction in Youth Crime

Increased School Readiness

We Analyzed the Research and Concluded...

NFP
produces
at least 3
outcomes
that meet
criteria for
PFS
financing



PFS-Suitable Outcomes Include...

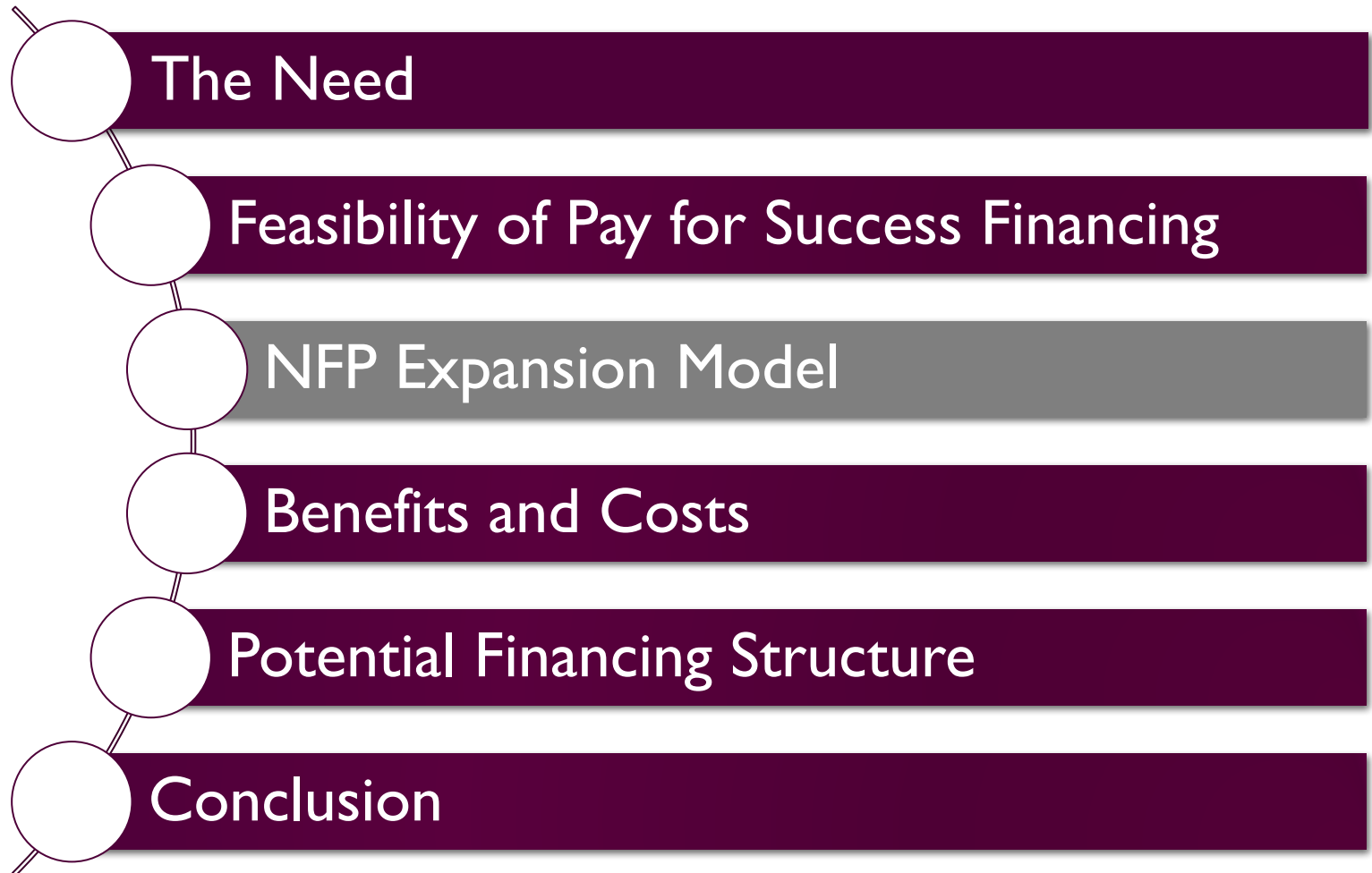
Nurse-Family Partnership

- ☐ **Reduction** in subsequent births within 24 months
- ☐ **Reduced** ER visits and hospitalizations due to acute injury
- ☐ **Reduced** preterm first births

How We Can Measure These Outcomes in Tennessee

Outcome	Data Source
Reduction in subsequent births within 24 months	TN Birth Statistical File
Reduced ER visits and hospitalizations due to acute injury	TN Hospital Discharge Database
Reduced preterm first births	TN Birth Statistical File

Roadmap



Expanding Nurse-Family Partnership

Enrollment will be targeted based on:

- Location
- Eligibility



NFP Locations in Tennessee

Current Locations

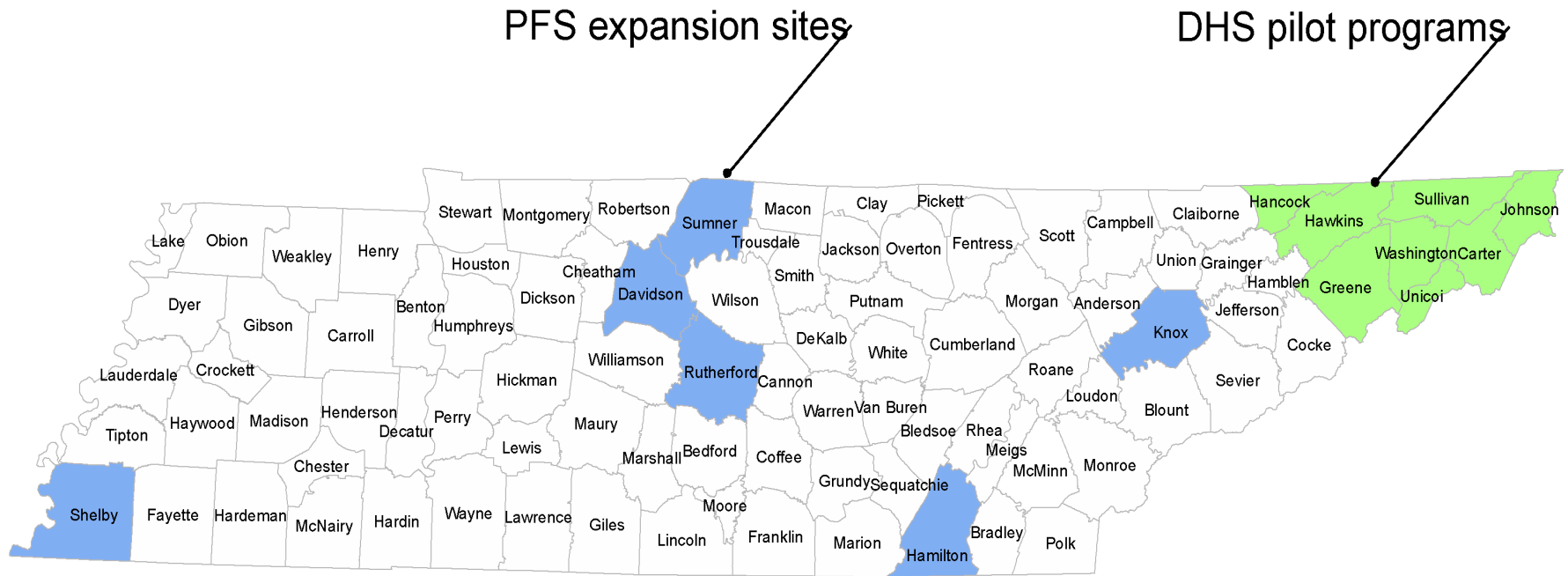
1. Shelby County (Memphis)
2. Carter County
3. Greene County
4. Hancock County
5. Hawkins County
6. Johnson County
7. Sullivan County
8. Unicoi County
9. Washington County

Expansion Locations

1. Davidson County
2. Hamilton County
3. Knox County
4. Rutherford County
5. Shelby County*
6. Sumner County

***Location of Le Bonheur Children's Hospital NFP site in Memphis.**

Geographic Focus of NFP Expansion and Pilot Locations



TennCare First Births by County in 2015

County	First Births
Shelby	2,696
Davidson	1,510
Hamilton	674
Knox	711
Rutherford	547
Sumner	304



Source: Birth Statistical System, 2015. Office of Healthcare Statistics, Division of Policy, Planning, and Assessment, Tennessee Department of Health.

Additional Capacity Needed in 6 Target Counties



The
Unmet
Need

Eligible Families/ Children	Current Capacity	Number Unserved	Number of New Slots Needed*
6,442	250	6,192	1,950

***Assumes a 25% take-up rate, applied after accounting for moms already receiving similar services and the maximum number of moms likely enrolled in NFP at anyone time.**

Likely To Enroll By County

TN County	Estimated Enrollment
Davidson	511
Hamilton	241
Knox	251
Rutherford	196
Shelby	642
Sumner	109
TOTAL	1,950

An estimated total of 1,950 families across these 6 counties, not receiving services similar to NFP, are likely to enroll in NFP in the event of an expansion.

NFP Formula: Calculating Additional Needed Capacity

- 1) Determine # of Medicaid/WIC eligible births
- 2) Eligible low income 1st births: 40% of all eligible
- 3) Moms who could be enrolled at any one time:
Multiply by 2.4 years
- 4) Moms likely enrolled at any one time: 60% of all who could be enrolled
- 5) Moms reached via referral system: 50% of likely enrollment
- 6) Moms who will actually enroll: 50% of moms reached

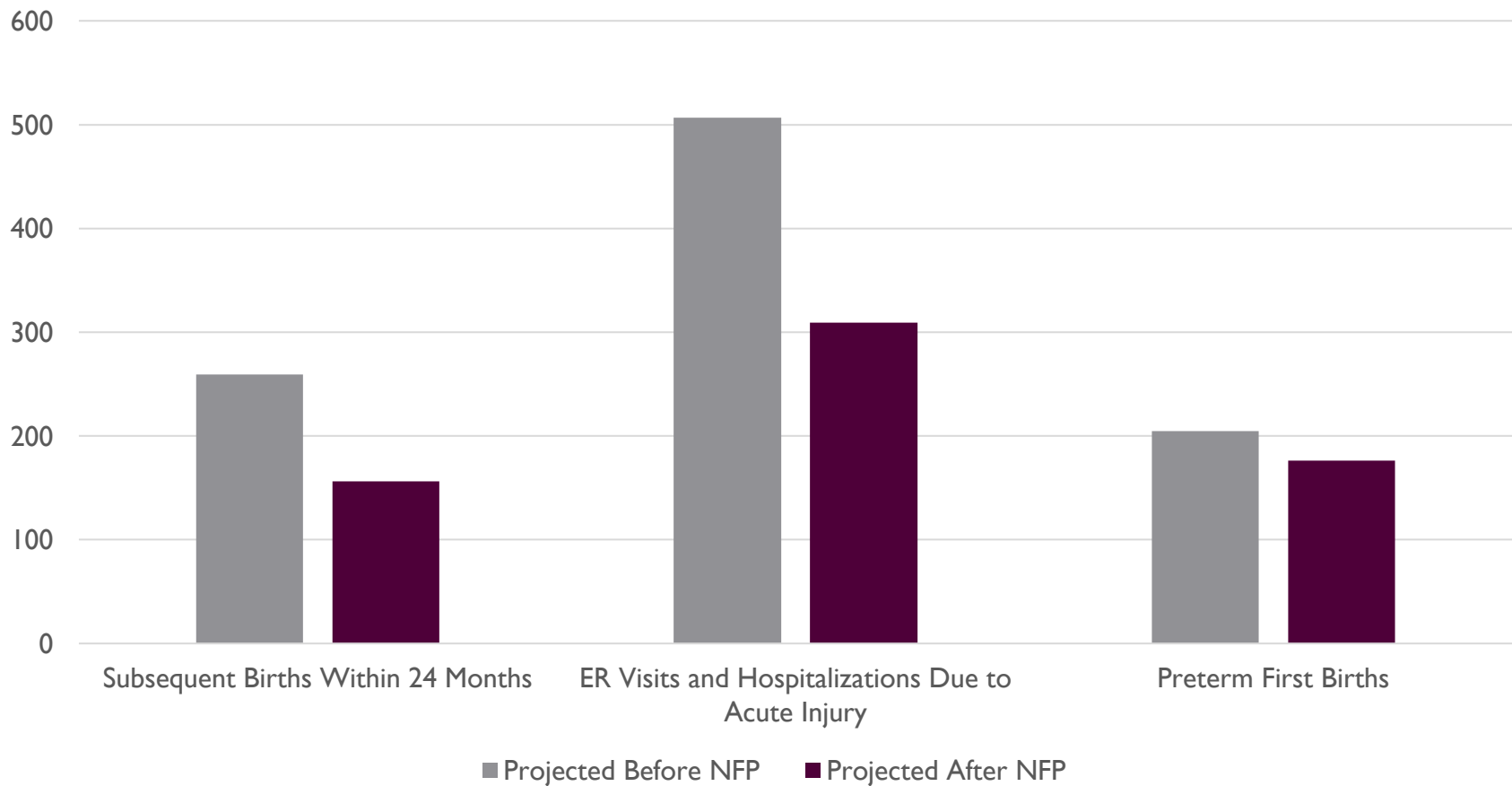
Projected Impact on First-Time Moms

Outcome	Baseline	Projected Impact Per Cohort
Reduction in subsequent births within 24 months	13.3%	40% reduction resulting in an estimated 103 fewer cases (out of 259 estimated cases)
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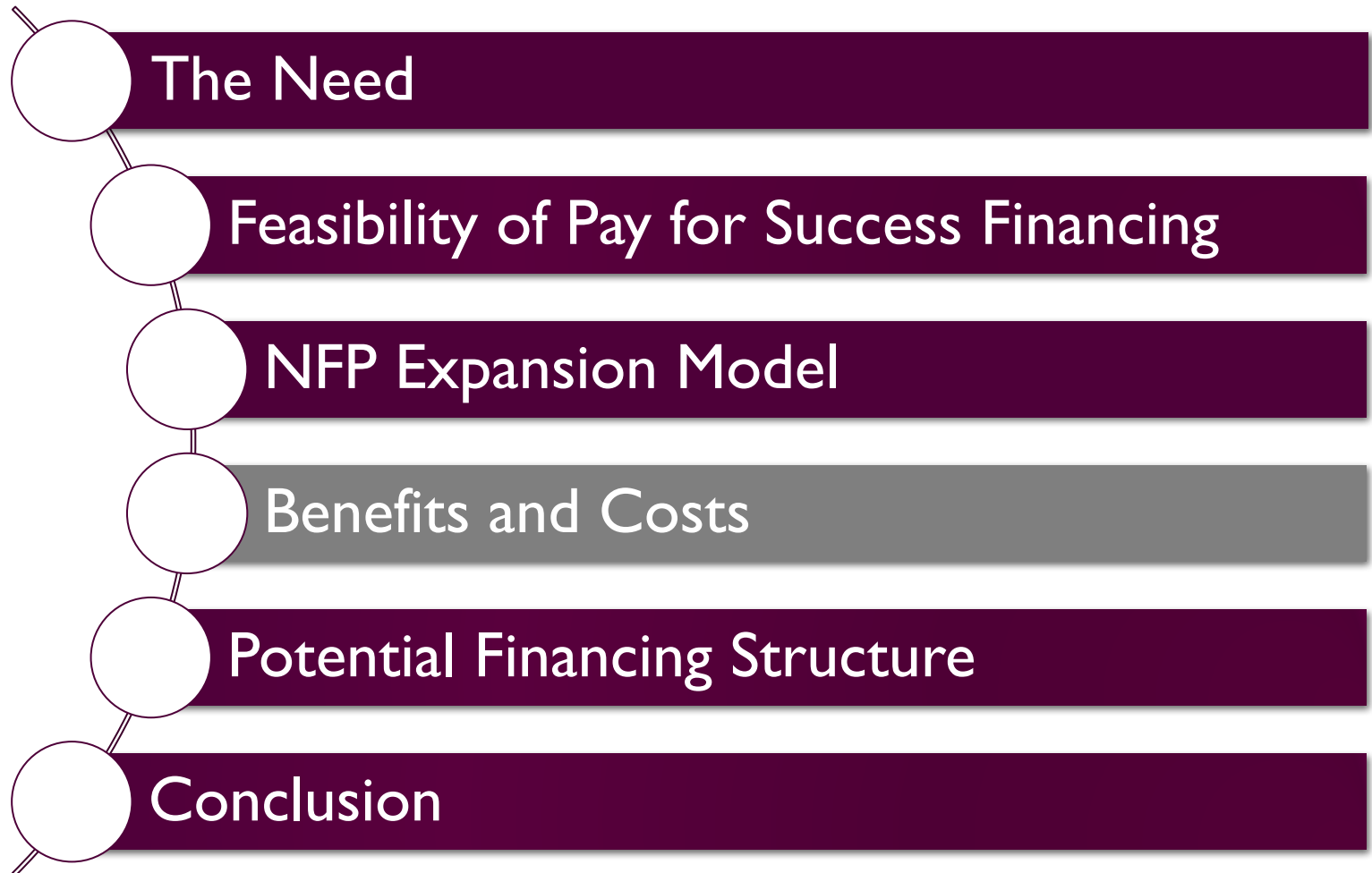
Source: Miller, Ted R. Life Status and Financial Outcomes of Nurse-Family Partnership in Tennessee. October 24, 2016. (Unpublished).

Size of Impact of NFP on PFS-Suitable Outcomes

Estimated Impacts of NFP

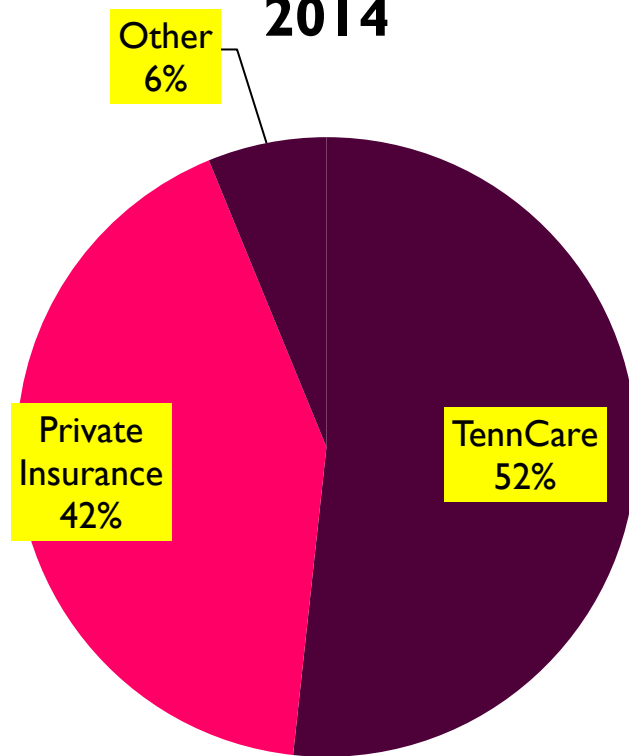


Roadmap



Paying for Births in Tennessee

**Payor for All Live Births
2014**



**52% of mothers had
TennCare during
pregnancy**

- Covered up to 60 days postpartum

Cost of Expansion in Tennessee

Expense	Number of Families	Cost of First Cohort (2.5 years)	Cost of Three Cohorts (5.5 years)
Cost per Family (\$7,739)*	1,950	\$15,000,000 for 1,950 families	\$45,000,000 for 5,850 families
Total		\$15,000,050	\$45,000,000

***Source:** Miller, Ted. "Cost Savings of Nurse-Family Partnership in Tennessee." October, 24, 2016. Unpublished.

Alternate Expansion Model: Smaller Cohorts

Expense	Cost of 1 st Cohort	Cost of 2 nd Cohort	Cost of 3 rd Cohort	Cost of 3 Cohorts (5.5 years)
Cost per Family (\$7,739)*	\$7,500,000 for 975 families	\$7,500,000 for 975 families	\$15,000,000 for 1,950 families	\$30,000,000 for 3,900 families
Total				\$30,000,000

***Source:** Miller, Ted. “Cost Savings of Nurse-Family Partnership in Tennessee.” October, 24, 2016. Unpublished.

Benefits of Nurse-Family Partnership Exceed the Costs

Benefits	Costs	Benefits minus Costs	Benefit to Cost Ratio
\$44,746	\$7,586	\$37,160	\$5.90 to \$1.00

For every dollar invested in NFP, Tennessee can expect to receive \$5.90 in benefits.

Source: Miller, Ted. “Societal Returns on Investment in Nurse-Family Partnership Services in Tennessee.” October, 24, 2016. Unpublished.

Economic Development Benefits of Nurse-Family Partnership

Economic analysis shows that expanding NFP will improve Tennessee's economy.



Education, employment, wages of former child participants

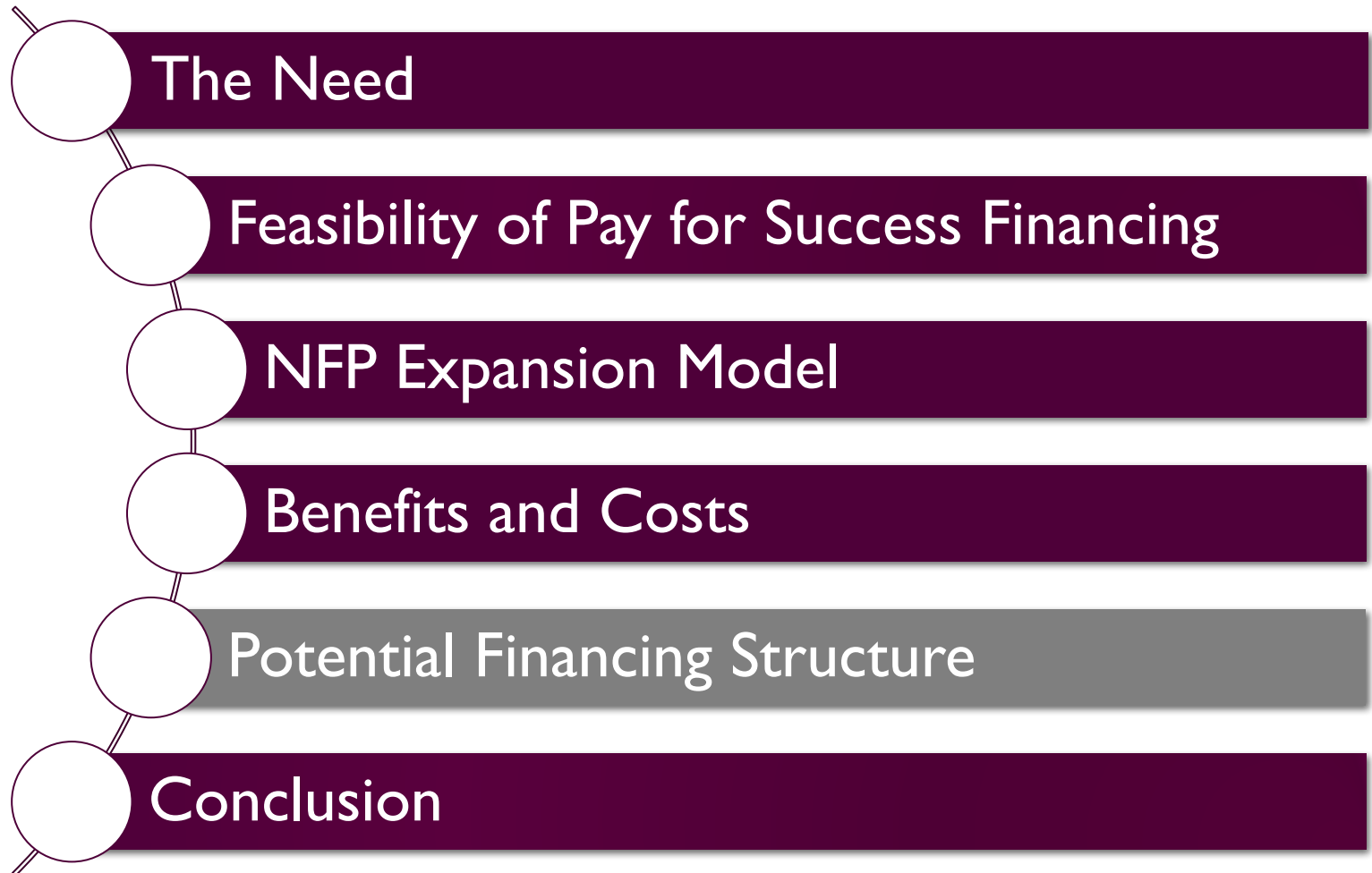


Wages of parents



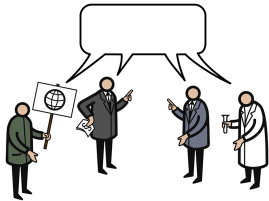
Employment, wages, economic activity from program expansion

Roadmap



Benefits of Pay for Success Financing Model

- Multiple stakeholders work together to ensure home visiting services for families who need them



- Tracks and incentivizes impact on families and children

- Provides up-front funding and support for community-based service providers



- Government does not pay unless outcomes are achieved!

Possible Financing Structure for NFP in Tennessee



Implementation:

- 3 cohorts receive services for a total of 5.5 years

Outcome Measurements:

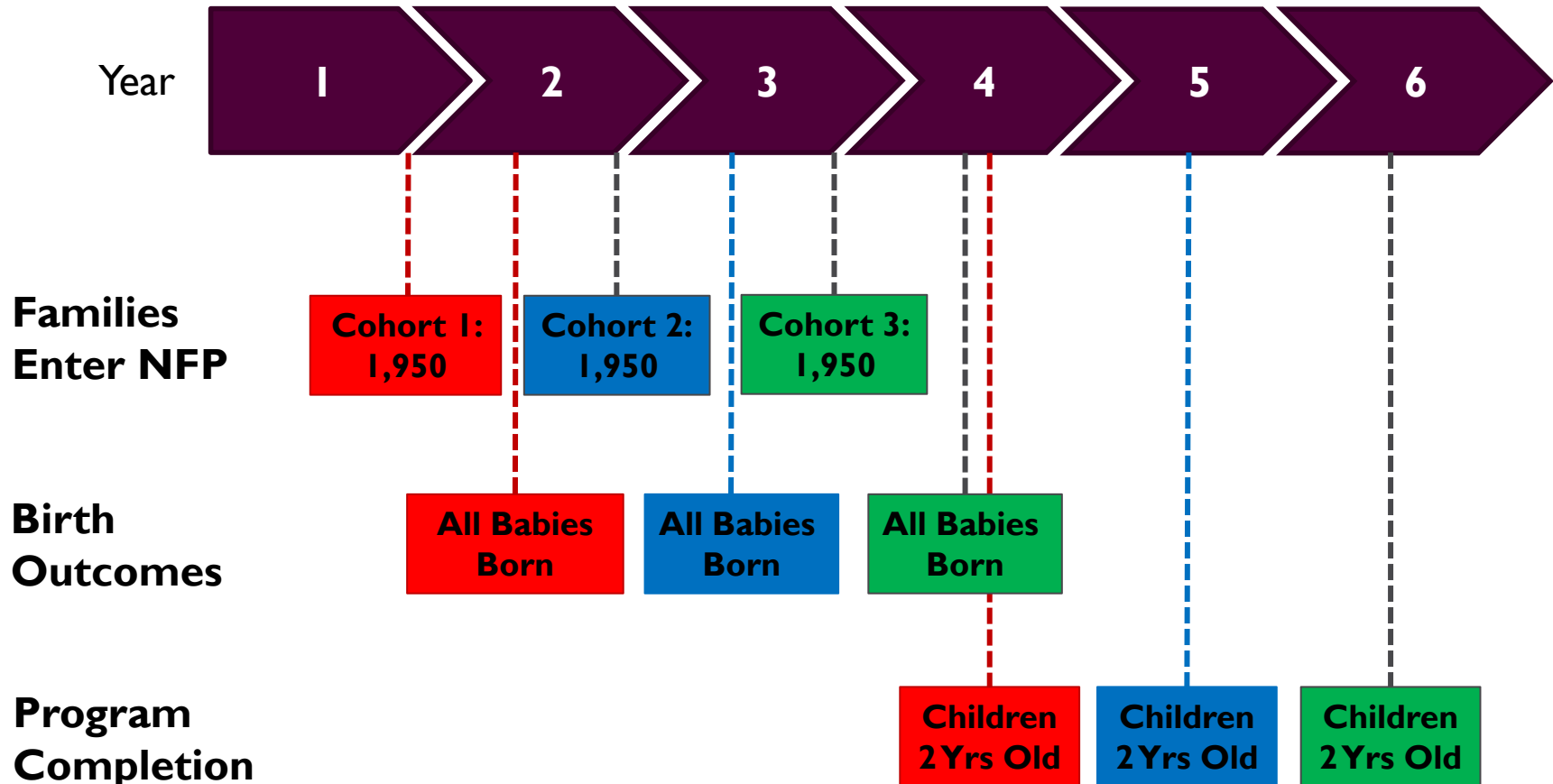
- Preterm birth: 3.5-year mark
- Healthy birth spacing & ER visits: 5.5-year mark

Payment Points:

- End of Year 4 for preterm birth, and end of year 6 for healthy birth spacing and injury-related ER visits

Estimated \$45 million investment for almost 6,000 families

Possible Timeline for PFS Project



Example: Financing Model Used in South Carolina NFP PFS Project

- ◆ Upfront funding from 5 philanthropic funders and Medicaid; \$30 million total investment
- ◆ SC Department of Health & Human Services as outcome payor
- ◆ Success payments are reinvested into SC NFP

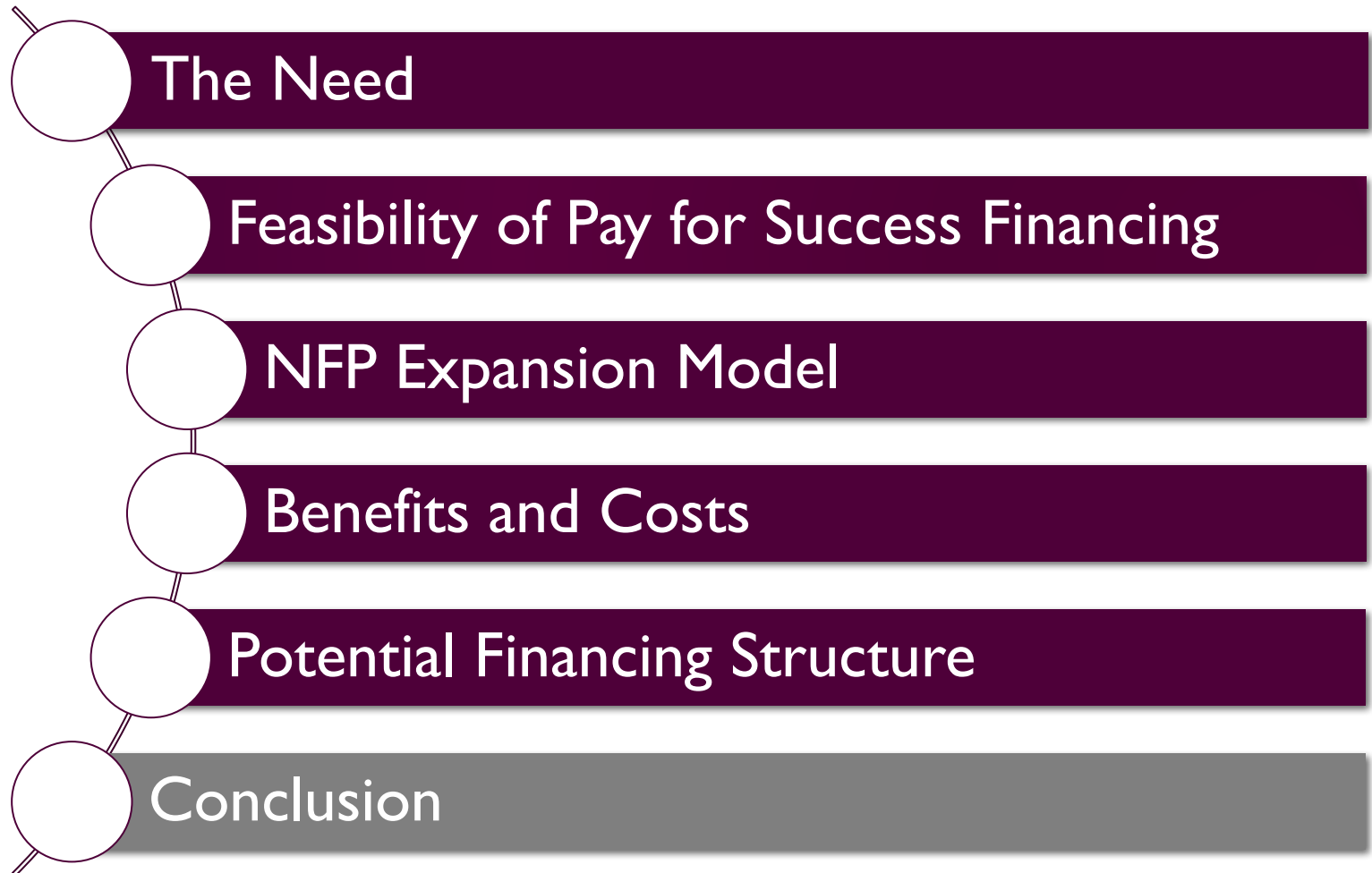
South Carolina PFS NFP Financing Model (Continued)

- ◆ Randomized controlled trial study design
- ◆ 4 years of enrollment & 6 years of service
- ◆ Payments at end of project years 4 and 5

How a Randomized Controlled Trial Works in South Carolina

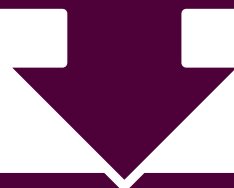
- **Randomly assign eligible women** to NFP or control group at each site, ideally AFTER they consent to participate in the program
- **Track outcomes** for program and control groups through state Medicaid database
- **Analyze differences** between program and control group in all 3 outcomes

Roadmap



Conclusion

Pay for Success is a **FEASIBLE** way to improve outcomes for Tennessee's children and families



**Tennessee should pursue
Pay for Success financing**



Challenges to Moving Forward



Gaining ground in 5 new counties

Next Steps

- 1) Secure an outcome payor
- 2) Identify implementing agencies in 5 new counties
- 3) Enter procurement and transaction structuring phase





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