




THE 4 P S © PLUS

*cost & savings analysis*

The background of the slide features a circular arrangement of hands of various skin tones (tan, brown, black, white) holding each other in a supportive grip. The hands are rendered in a simple, sketchy style with dark outlines. A dark grey horizontal band is overlaid across the center of the image, containing the main text.

**ACROSS SEVERAL DECADES, MULTIPLE STUDIES HAVE DOCUMENTED THE HEALTH AND COST BENEFITS OF IDENTIFYING AND TREATING PREGNANT WOMEN WHO ARE USING SUBSTANCES.**

# INITIAL STUDIES

## EARLY IDENTIFICATION

In 1989, our research team published the first article showing that if physicians identify the pregnant woman early in pregnancy, provide treatment services that lead to the woman becoming drug free by the third trimester, the rate of preterm delivery, *abruptio placenta*, low birth weight, neonatal seizures, and neonatal intensive care unit (NICU) admission are significantly reduced.<sup>1</sup>

## UNIVERSAL SCREENING & DRUG TREATMENT

In 2008, Kaiser Permanente Medical Care Program published a study that demonstrated the effectiveness of their comprehensive prenatal care program, Early Start, which included universal screening and provision of drug treatment services,<sup>2</sup> in significantly reducing the rates of abruptio placenta, preterm delivery, low birth weight, need for neonatal ventilation, and admission to the NICU.

## COST SAVINGS

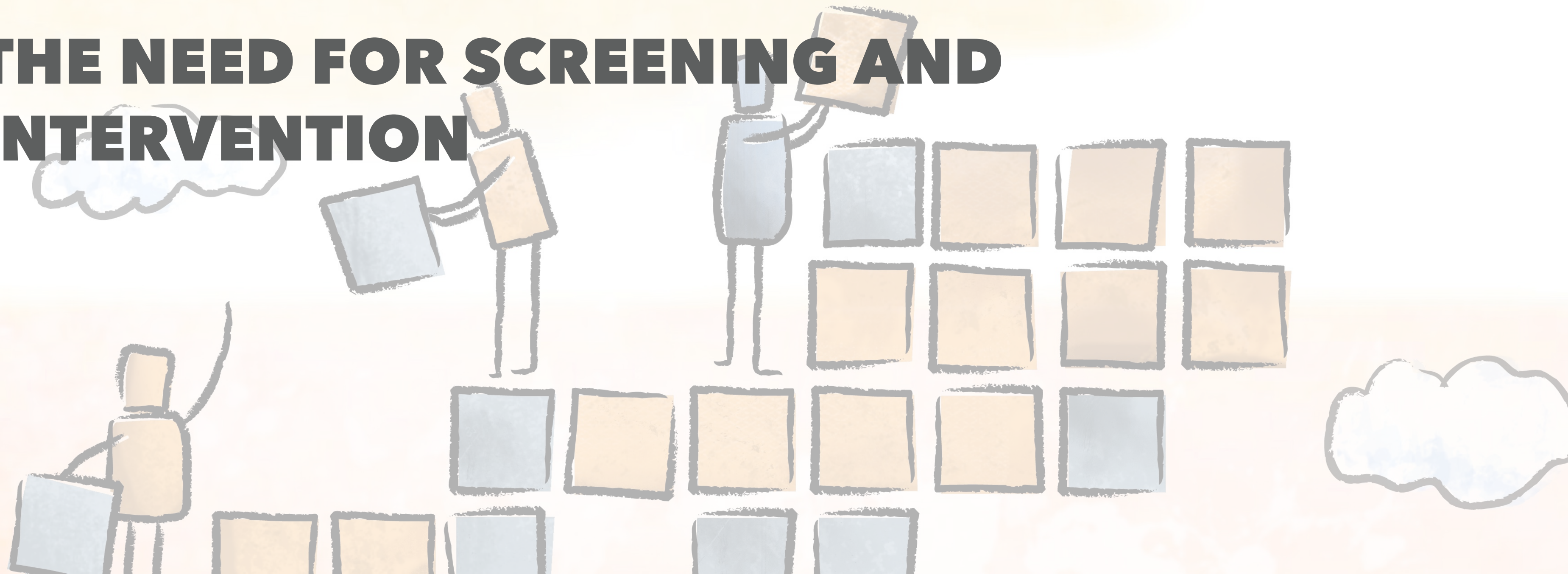
An accompanying analysis of cost savings obtained through the Early Start program found that the 1% reduction in the rate of delivery prior to 33 weeks resulted in potential financial savings in the millions of dollars.<sup>3</sup>

<sup>1</sup>Chasnoff, I. J., Griffith, D. R., MacGregor, S., Dirkes, K., Burns, K. A. (1989) Temporal patterns of cocaine use in pregnancy: Perinatal outcome. *Journal of the American Medical Association*. 261:1741-1744.

<sup>2</sup>Goler, N, Armstrong, M. A., Taillac, C. J., Osejo, V. M. (2008) Substance abuse treatment linked with prenatal visits improves perinatal outcomes: A new standard. *Journal of Perinatology*. 28:597-603.

<sup>3</sup>Caughey, A. B. (2008) Tackling substance abuse in pregnancy: A cost-saving approach. *Journal of Perinatology*. 28:587.

# THE NEED FOR SCREENING AND INTERVENTION



Given that most prenatal care providers do not have immediate access to substance abuse treatment services, **the U.S. Prevention Services Task Force has recommended the use of screening, brief intervention, referral, and treatment (SBIRT) for all pregnant women enrolled in prenatal care.**<sup>4</sup> *NTI Upstream*, in the early 1990s, began developing and validating such an SBIRT approach, grounded in universal screening with the *4Ps Plus*<sup>5</sup> and the *I am concerned...*<sup>6</sup> brief intervention curriculum.

Two major cost analysis studies using this approach have been conducted.

<sup>4</sup>U. S. Prevention Services Task Force. (2019) Screening and Behavioral Counseling Interventions to Reduce Unhealthy Alcohol Use in Adolescents and Adults: Recommendation Statement. *Am Fam Physician*. 2019 Jun 15:99.

<sup>5</sup>Chasnoff, I. J., Wells, A., McGourty, R. F., Bailey, L. K. Validation of the *4Ps Plus*® Screen for Substance Use in Pregnancy. *Journal of Perinatology*, 2007;27:744-748.

<sup>6</sup>McGourty, R. M. and Chasnoff, I. J. (1997) *I am concerned...* Pretreatment Manual for Pregnant Women. NTI Upstream: Chicago, IL.

# **SAN BERNARDINO COST ANALYSIS**

**SAN BERNARDINO COUNTY IS THE GEOGRAPHICALLY LARGEST COUNTY IN THE UNITED STATES. STRETCHING FROM THE PACIFIC OCEAN TO THE ARIZONA BORDER, UNIVERSAL SCREENING WITH THE *4PS PLUS*© AND DELIVERY OF THE *I AM CONCERNED...* © BRIEF INTERVENTION WAS ROLLED OUT ACROSS THE COUNTY OVER A PERIOD OF THREE YEARS.**

**AFTER THE FIRST 2 YEARS OF THE PROGRAM, OUTCOMES OF THE COUNTY'S PREGNANCIES WERE ANALYZED.**

# SAN BERNARDINO COST ANALYSIS

At that point, 8520 women had been screened with the *4P's Plus*© - those with a positive screen had received a brief intervention.

In comparison, 23,137 women had delivered during that same time period without benefit of screening and brief intervention.

Among the **women who had been screened and provided a brief intervention, rate of low birth weight went DOWN 18%**. The rate of low birth weight among women who were not screened went UP 2%.

# RATES OF LOW BIRTH WEIGHT INFANTS

**+ 2%**  
INCREASE IN LOW BIRTH RATE

**WITHOUT INTERVENTION**

The rate of low birth weight **went up 2% among women who were not screened** using *4Ps Plus* © and therefore received no brief intervention

**-18%**  
DECREASE IN LOW BIRTH RATE

**WITH INTERVENTION**

The rate of low birth weight **went down 18% among women who were screened** using *4Ps Plus* © and provided a brief intervention

# SAN BERNARDINO COST ANALYSIS

For every 100 women who were screened and received the brief intervention as needed, the cost to the county was \$169.

\$169

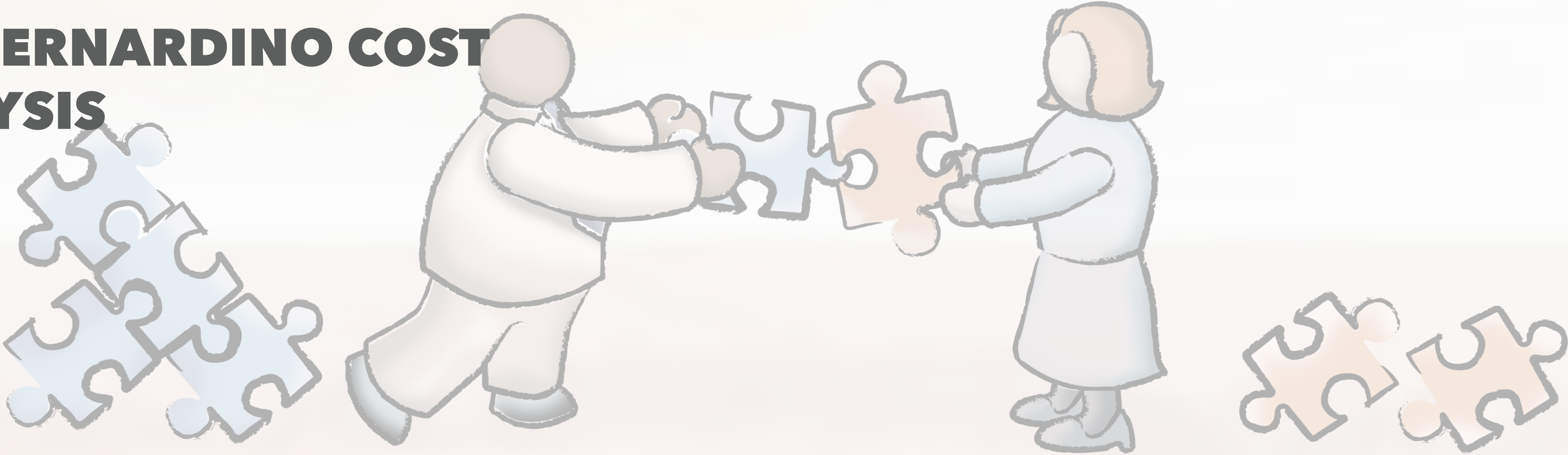
At the time of the study, care of low birth weight infants cost the county's health care system between \$500 to \$250k per infant.

\$500-  
250K

The director of San Bernardino County's Maternal and Child Health Division calculated that medical assistants' screening of all pregnant women with the *4Ps Plus*® and delivering of the brief intervention for all women with a positive screen cost the county \$1.69 per pregnant woman across the population; thus, screening and delivering a brief intervention to every 100 women cost the county \$169.

On the other hand, newborn care of low birth weight infants at that time cost the county's health care system from \$500 to \$250,000/infant.

# SAN BERNARDINO COST ANALYSIS



Using a very conservative estimated average additional cost of \$1,000 per low birth weight infant, a 20% reduction in the rate of low birth weight infants among 100 pregnancies would result in a cost savings of \$20,000.



# **SAN BERNARDINO COUNTY COST ANALYSIS**

**THIS MEANS THAT FOR THE 8,520 WOMEN WHO HAD BEEN SCREENED AND WHO RECEIVED A BRIEF INTERVENTION AS NEEDED, THE PROGRAM COST THE COUNTY \$14,399 BUT SAVED THE COUNTY'S HEALTH CARE SYSTEM \$1,704,000 OVER THE TWO-YEAR PERIOD.**

# SOLANO COUNTY COST ANALYSIS

## FIRST YEAR LIFE COSTS



The Board of Supervisors in Solano County, California were interested in the cost impact of screening and brief intervention in pregnancy on the infant's medical costs over the first year of life (excluding neonatal hospital costs).

## SCREENING WITH 4PS PLUS<sup>®</sup>



Among the first 8,000 women screened with the *4Ps Plus*<sup>®</sup> in Solano County, 1,644 women at the first prenatal visit had a positive screen and 688 were continuing to use in the first trimester.

## EFFECTS OF INTERVENTION



The *I am concerned...* <sup>®</sup> brief intervention was administered to all 688 women. Follow up screening in the third trimester showed that 427 of the 688 women had stopped all substance use and 261 had continued to use.

## COSTS WITH SCREENING



During the time period of the study in Solano County, the medical costs for a healthy term infant over the first year of life was, on average, \$4,551.

## COST WITHOUT SCREENING



In comparison, the medical costs over the first year of life for a low birth weight baby, excluding neonatal hospital costs, was \$49,000.

# SOLANO COUNTY COST ANALYSIS

In 2010, when this study was conducted, the low birth weight rate for a healthy pregnancy was 3%, while the low birth weight rate for a pregnancy complicated by third trimester substance use was 12%.

Based on these rates, the 405 women who had ceased substance use had delivered 12.2 low birth weight infants.

If these 405 women had continued to use substances, they would have delivered 48.6 low birth weight infants.

Thus, 36.4 low birth weight babies were not delivered to these 405 women (48.6 minus 12.2).

**SCREENING AND  
BRIEF INTERVENTION  
SAVED THE COUNTY  
\$1,617,944**

*The first-year medical cost difference of a low birth weight baby was \$44,499 per infant. By multiplying \$44,499 x 36.4, we calculated that the screening and brief intervention program had saved the county \$1,617,944 in first-year medical costs.*

# THE BOTTOM LINE



Setting aside the long-term cost implications of ongoing substance abuse in the family, a child with a history of low birth weight is 4 times more likely to have behavioral/ psychiatric problems and 50% more likely to require special education services.

The bottom line? **Screening with the *4Ps Plus*® accompanied by the *I am concerned...*© brief intervention saves money and saves lives.**



*nti* upstream