

Using RCT's to Test and Refine the Nurse-Family Partnership

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Baltimore, 1970

NURSE FAMILY PARTNERSHIP

- **Program with power**
 - Nurses visit families from pregnancy through child age two
 - Makes sense to parents
 - Solid empirical & theoretical underpinnings
 - Focuses on parental behavior and context
- **Rigorously tested**





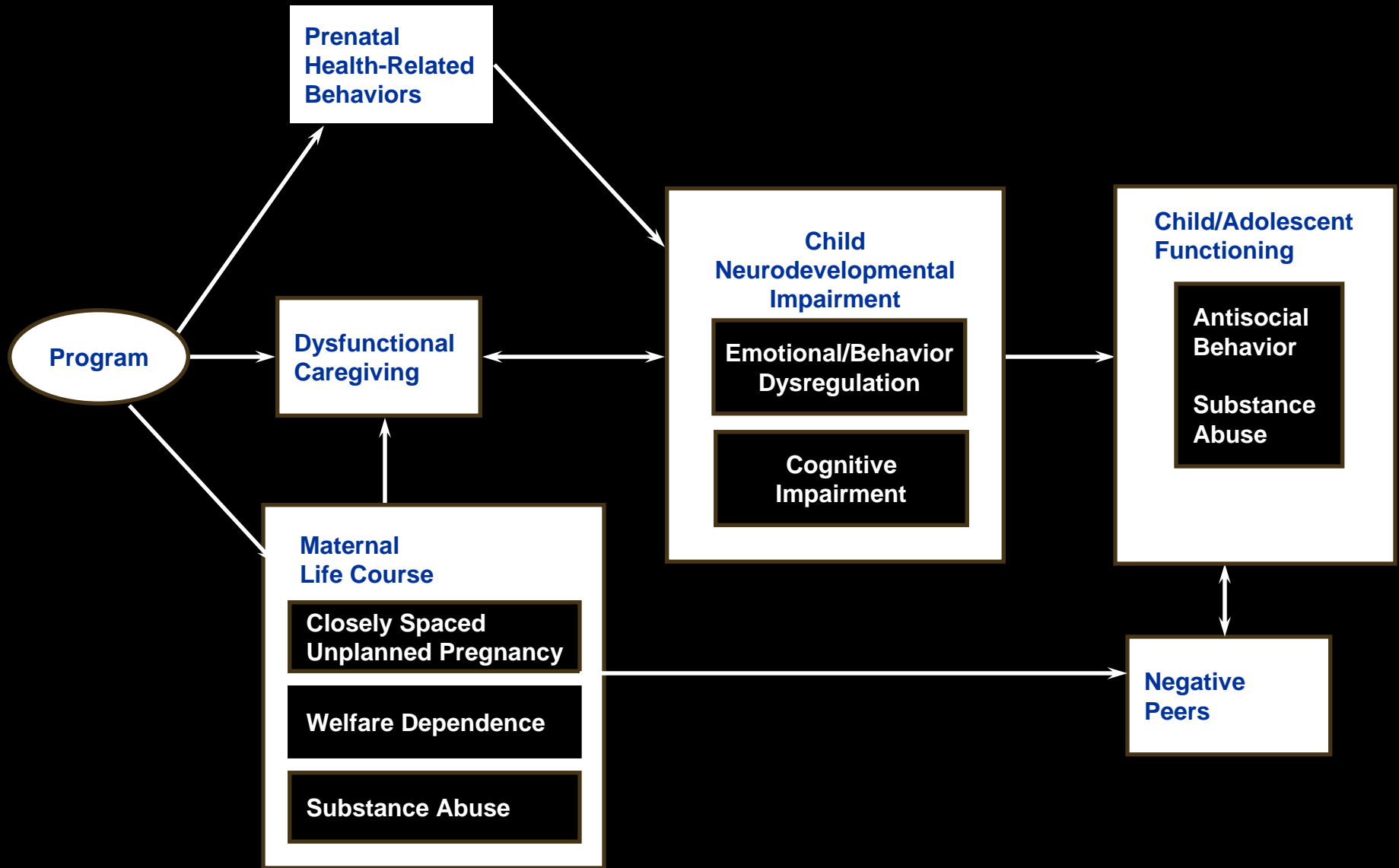
FAMILIES SERVED

- **Low income pregnant women**
 - Usually teens
 - Usually unmarried
- **First-time parents**



NURSE FAMILY PARTNERSHIP'S THREE GOALS

- 1. Improve pregnancy outcomes**
- 2. Improve child health and development**
- 3. Improve parents' economic self-sufficiency**



TRIALS OF PROGRAM

**Elmira, NY
1977**



N = 400

- Low-income whites
- Semi-rural

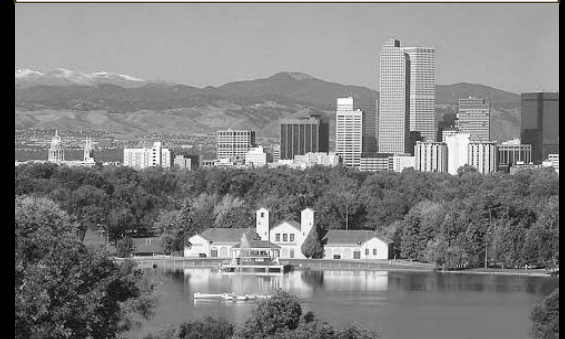
**Memphis, TN
1987**



N = 1,138

- Low-income blacks
- Urban

**Denver, CO
1994**



N = 735

- Large portion of Hispanics
- Nurse versus paraprofessional visitors

CONSISTENT RESULTS ACROSS TRIALS

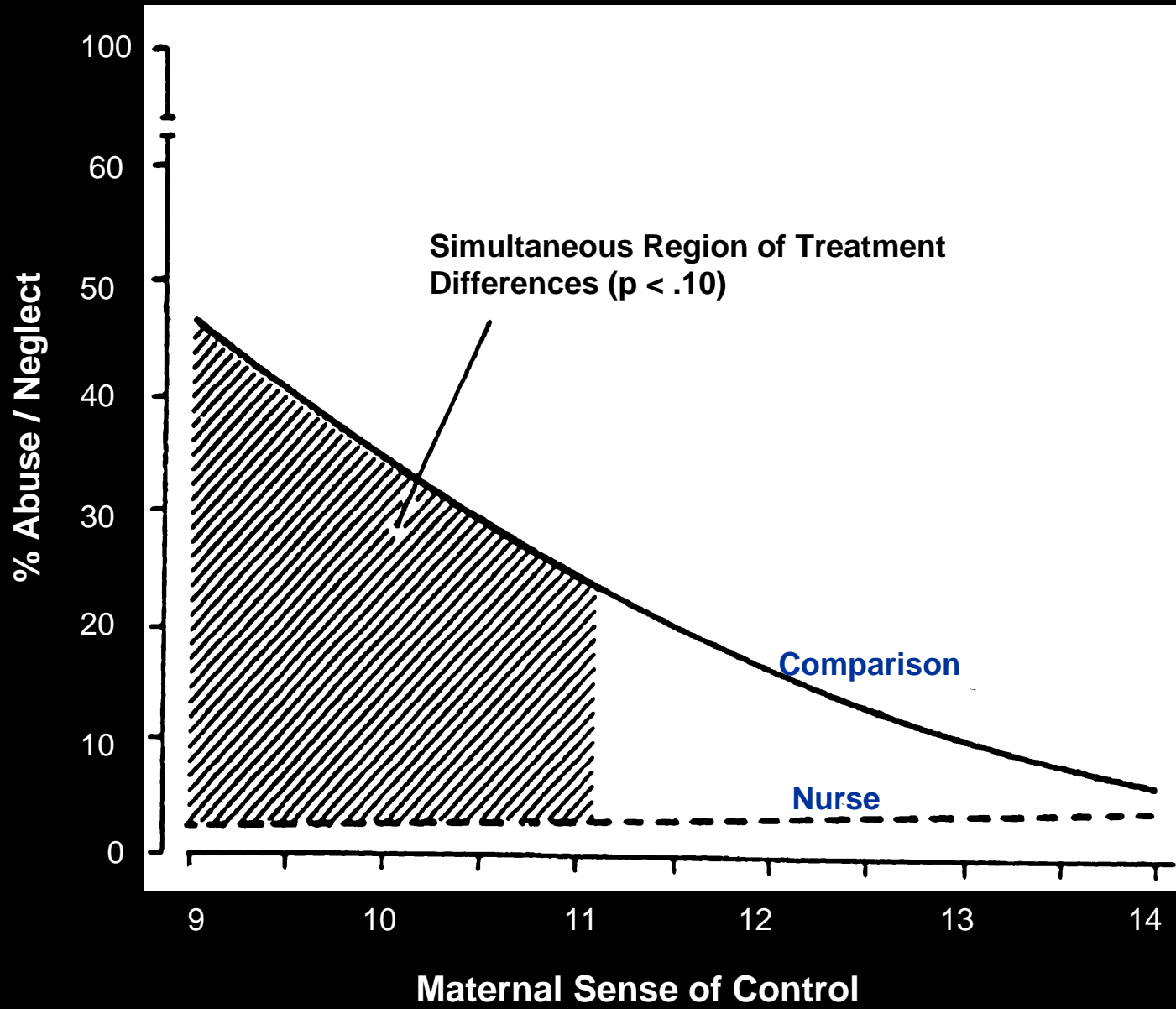
- Improvements in women's prenatal health
- Reductions in children's injuries
- Fewer subsequent pregnancies
- Greater intervals between births
- Increases in fathers' involvement
- Increases in employment
- Reductions in welfare and food stamps
- Improvements in school readiness (low resource mothers)
- Effects greatest for most susceptible

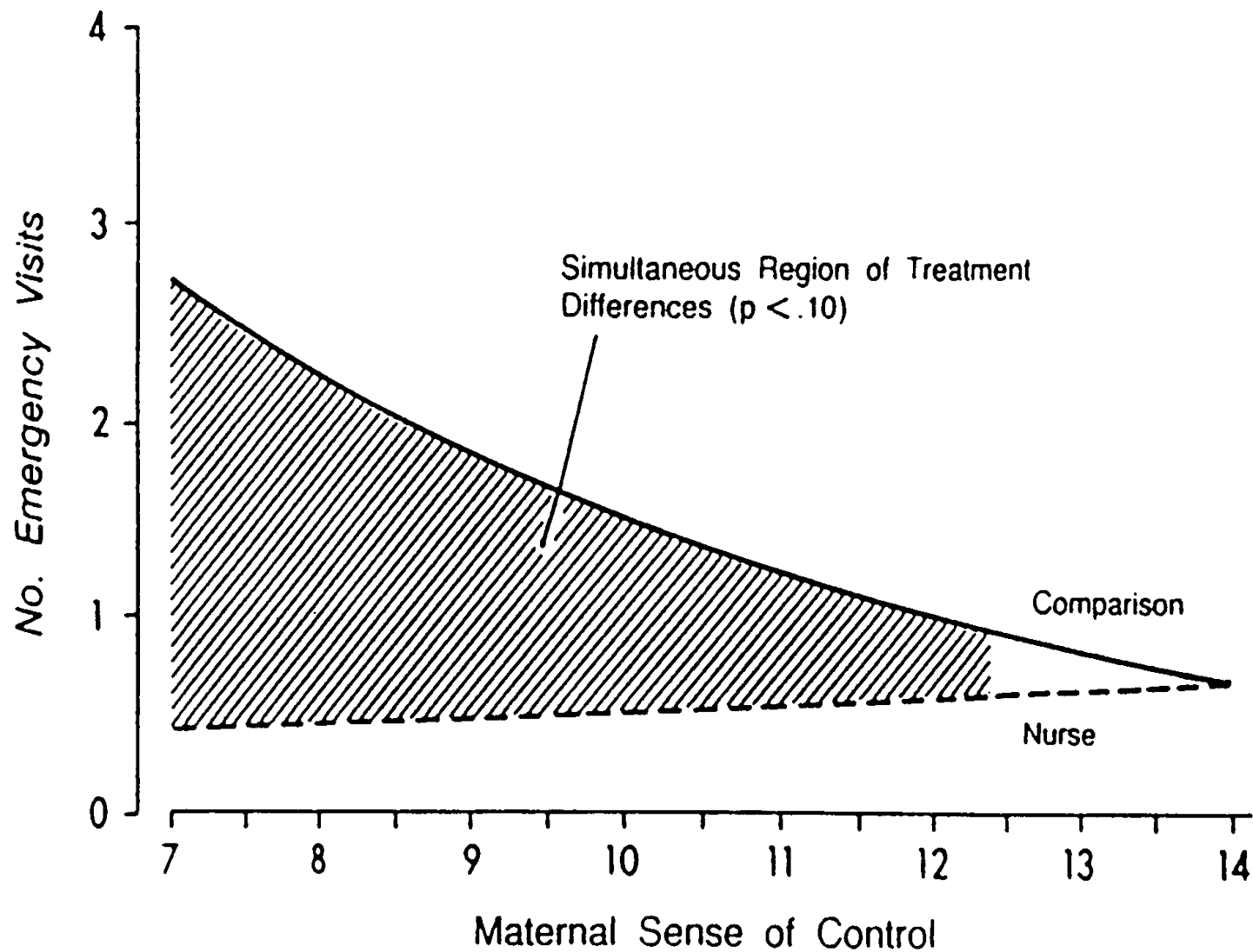


Elmira Maltreatment & Injuries (0 - 2 Years)

- **80% Reduction in Child Maltreatment (Poor, Unmarried Teens) – $p=.07$**
- **56% Reduction in Emergency Room Visits (12-24 Months)**







ELMIRA SUSTAINABLE RESULTS:

Benefits to Mothers

Arrests



61%

Convictions



72%

Days in Jail*



98%

* Impact on days in jail is highly significant, but the number cases that involved jail-time is small, so the magnitude of program effect is difficult to estimate with precision



15-YEAR FOLLOW-UP

ELMIRA SUSTAINABLE RESULTS: Benefits to Children

Abuse & Neglect



48%

Arrests



59%

Adjudications as PINS*



90%

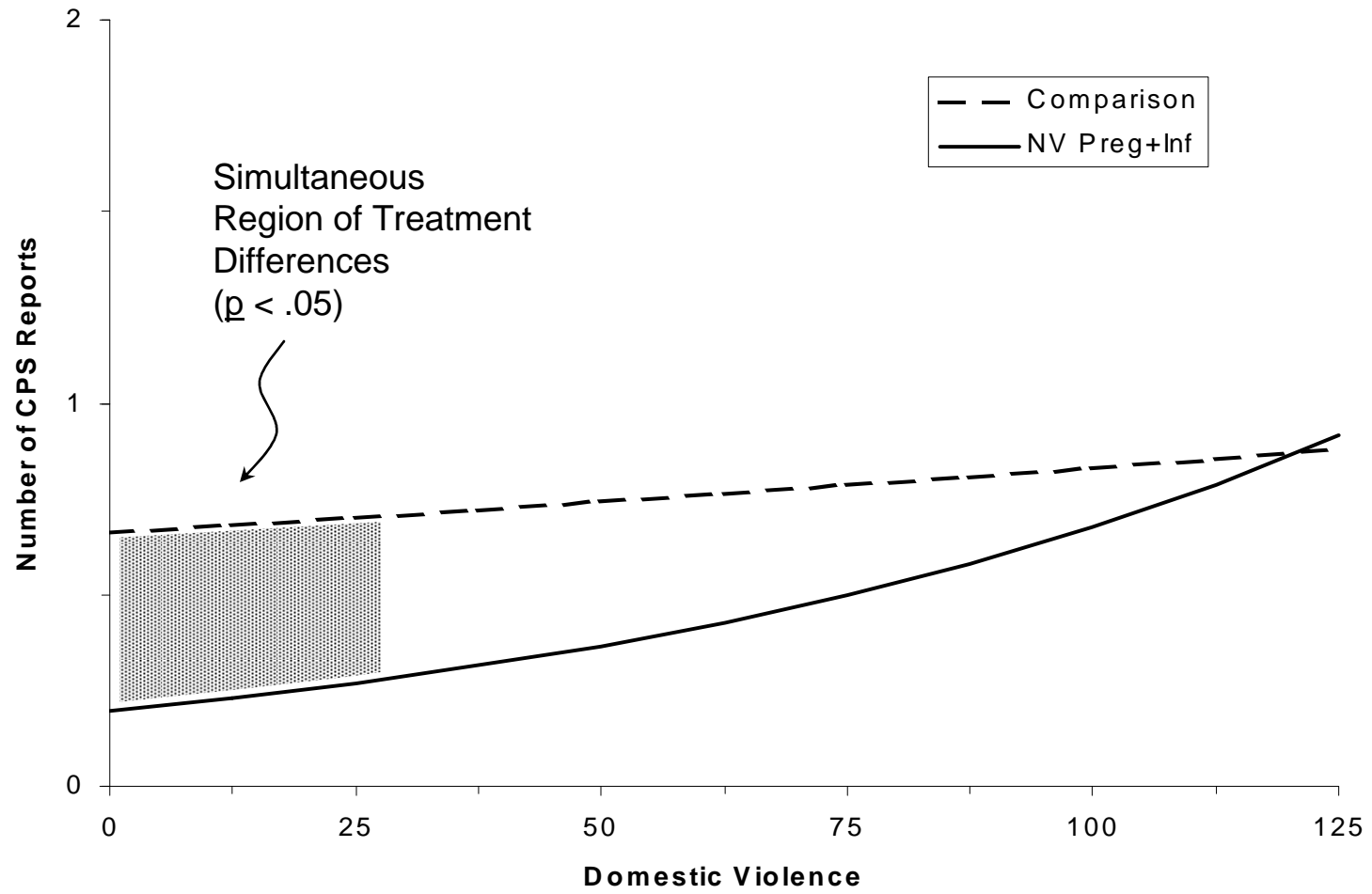
(Person In Need of
Supervision) for incorrigible
behavior

* Based upon family-court records of 116 children who remained in study-community for 13-year period following end of program.



15-YEAR FOLLOW-UP

Maltreatment Reports Involving the Study Child by Treatment Status and Domestic Violence



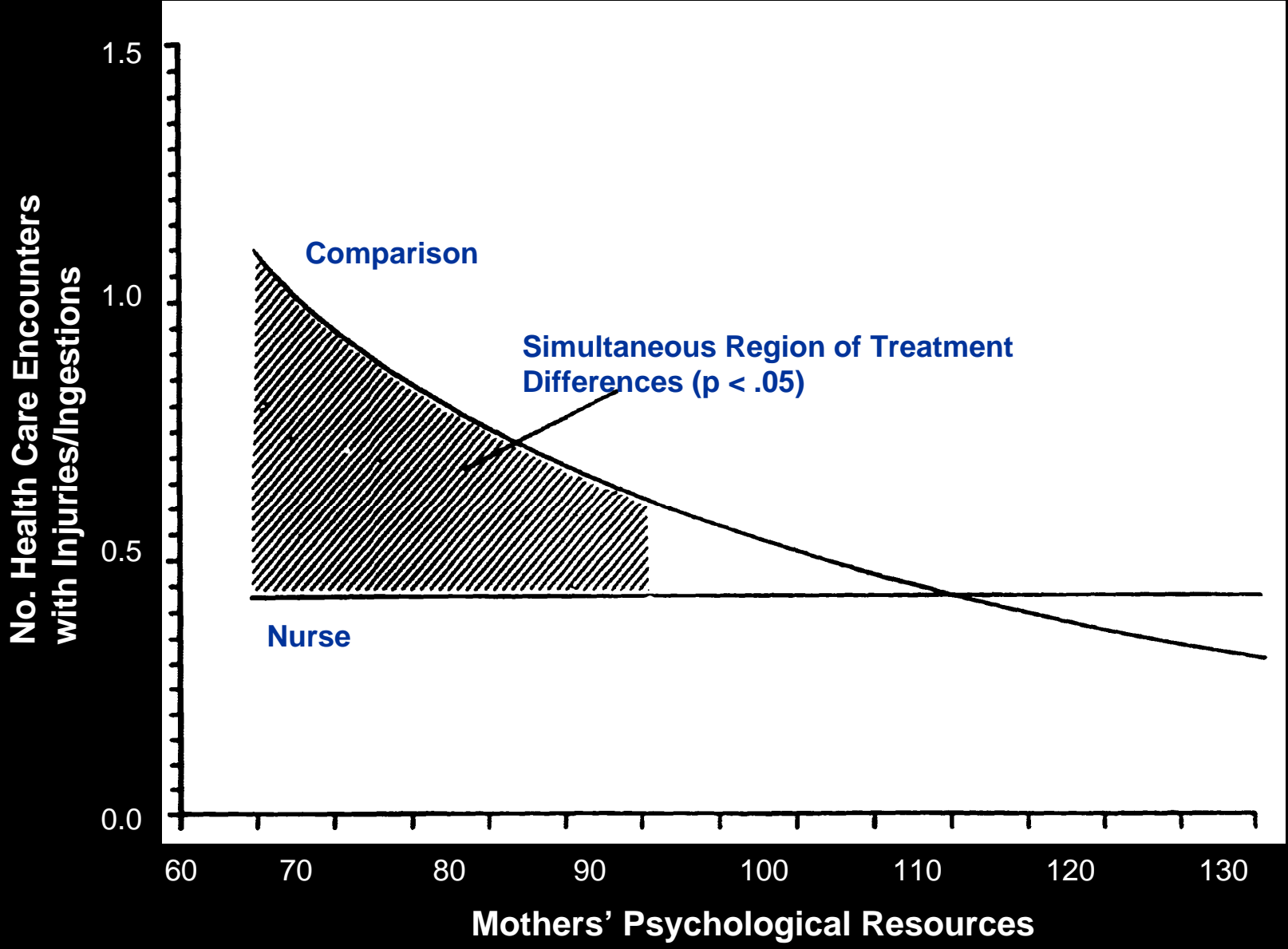
Memphis Design

- **Urban Setting**
- **Sample (N = 1138 for prenatal and N = 743 for postnatal)**
 - **92% African American**
 - **98% Unmarried**
 - **85% < Federal Poverty Index**
 - **64% < 19 years at intake**
 - **Neighborhood Disorganization 3.2 SD above national mean**

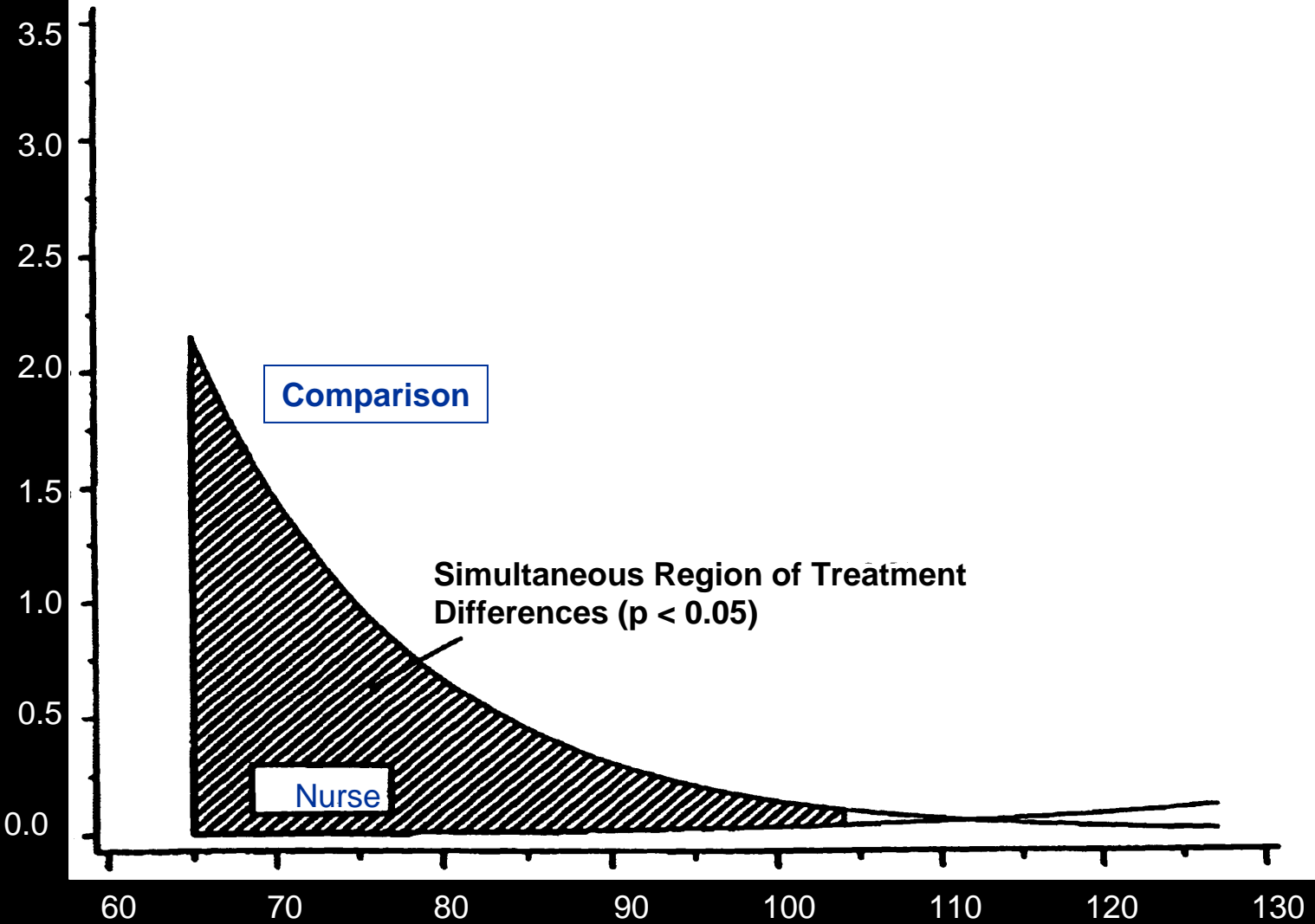
Memphis Program Effects on Childhood Injuries (0 - 2 Years)

- **23% Reduction in Health-Care Encounters for Injuries & Ingestions**
- **80% Reduction in Days Hospitalized for Injuries & Ingestions**





No. Days Hospitalized with Injuries/Ingestions



Comparison

Nurse

Simultaneous Region of Treatment Differences ($p < 0.05$)

60 70 80 90 100 110 120 130

Mothers' Psychological Resources

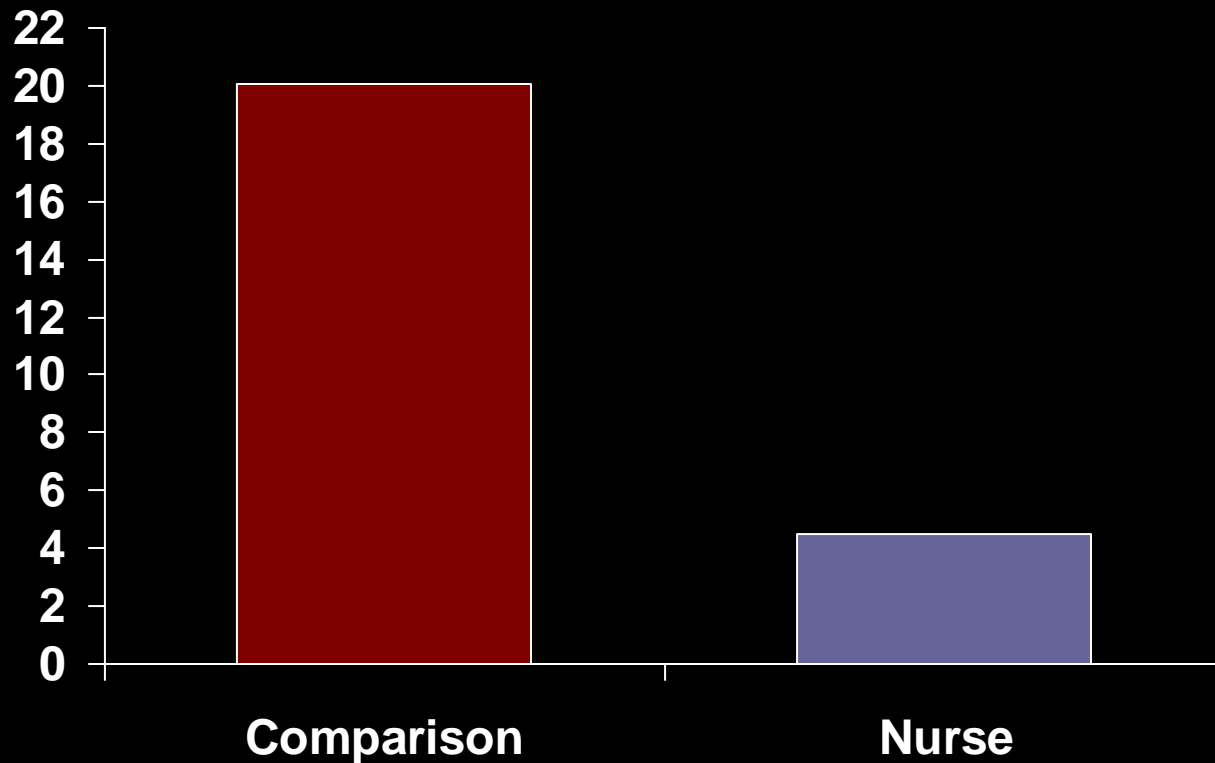
Diagnosis for Hospitalization in which Injuries and Ingestions Were Detected Nurse-Visited (n=204)

	<u>Age (in months)</u>	<u>Length of Stay</u>
▪ Burns (1 ^o & 2 ^o to face)	12.0	2
▪ Coin Ingestion	12.1	1
▪ Ingestion of Iron Medication	20.4	4

Diagnosis for Hospitalization in which Injuries and Ingestions Were Detected - Comparison (n=453)

	<u>Age (in months)</u>	<u>Length of Stay</u>
▪ Head Trauma	2.4	1
▪ Fractured Fibula/Congenital Syphilis	2.4	12
▪ Strangulated Hernia with Delay in Seeking Care/ Burns (1 ^o to lips)	3.5	15
▪ Bilateral Subdural Hematoma	4.9	19
▪ Fractured Skull	5.2	5
▪ Bilateral Subdural Hematoma (Unresolved)/ Aseptic Meningitis - 2nd hospitalization	5.3	4
▪ Fractured Skull	7.8	3
▪ Coin Ingestion	10.9	2
▪ Child Abuse Neglect Suspected	14.6	2
▪ Fractured Tibia	14.8	2
▪ Burns (2 ^o face/neck)	15.1	5
▪ Burns (2 ^o & 3 ^o bilateral leg)	19.6	4
▪ Gastroenteritis/Head Trauma	20.0	3
▪ Burns (splinting/grafting) - 2nd hospitalization	20.1	6
▪ Finger Injury/Osteomyelitis	23.0	6

Childhood Mortality (per thousand live births) Birth to Age Nine - Memphis



P = .08, OR = .21

Causes of Child Death 0-9 Years - Memphis

Comparison (N=498)

Cause of Death Age at Death-days

Extreme Prematurity	3
Sudden Infant Death Syndrome	20
Sudden Infant Death Syndrome	35
Ill Defined Intestinal Infections	36
Sudden Infant Death Syndrome	49
Multiple Congenital Anomalies	152
Chronic Respiratory Disease Arising in Perinatal Period	549
Homicide Assault by Firearm	1569
Motor Vehicle Accident	2100
Accident Caused by Firearm	2114

Nurse-Visited (N=222)

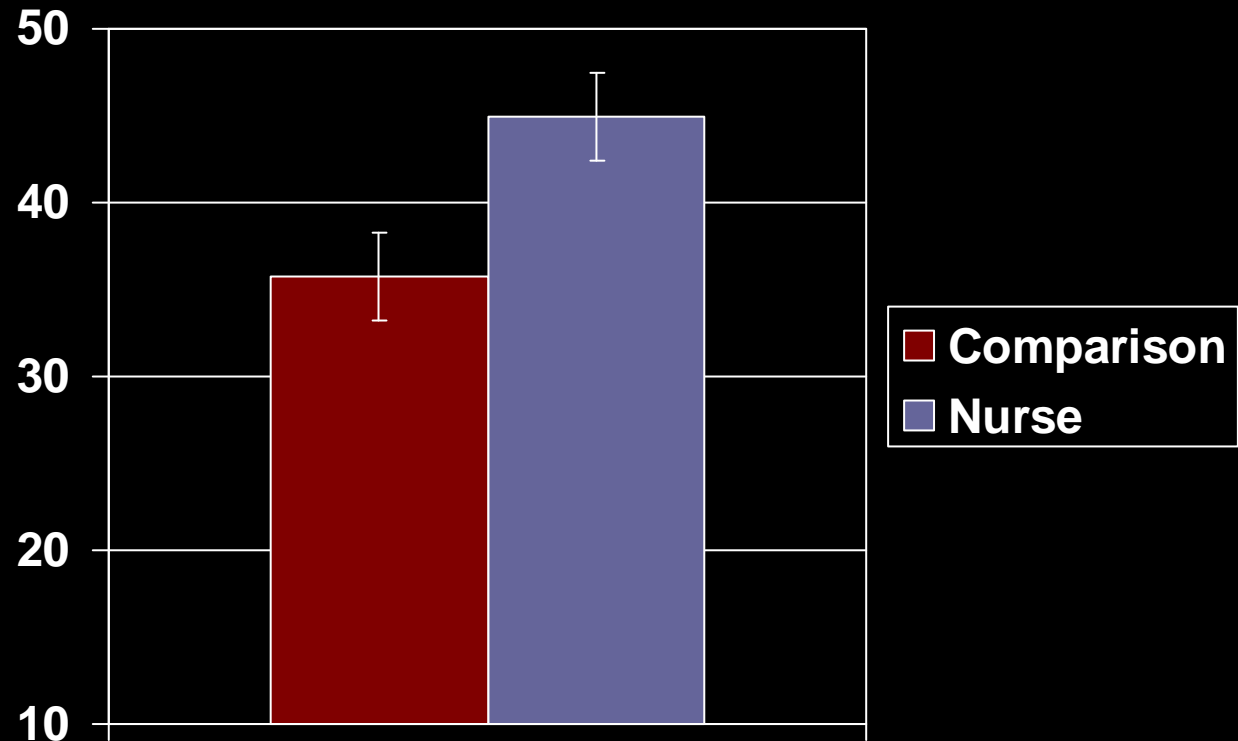
Cause of Death Age at Death-days

Chromosomal Abnormality	24
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Group Achievement Test Scores

Reading & Math, Grade 1-3

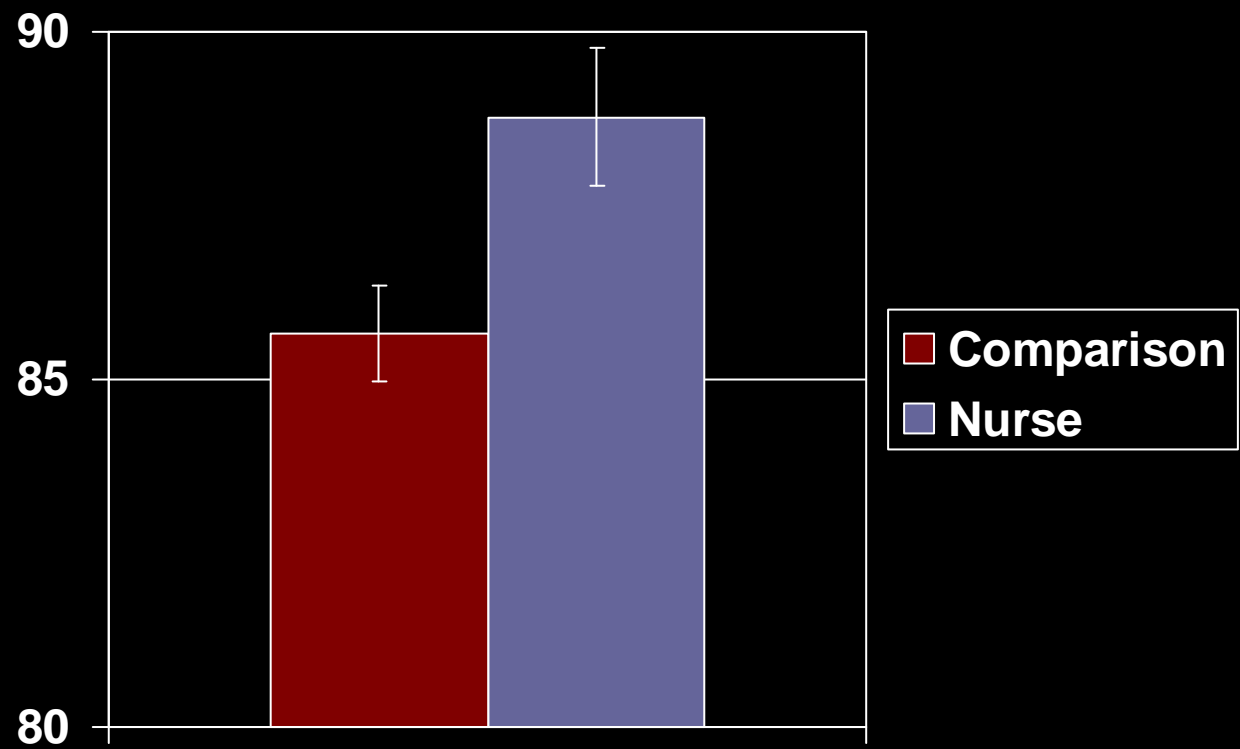
Born to Low-Resource Mothers



$p=.002$, Effect Size = 0.33

PIAT Scores Reading & Math, Age 12

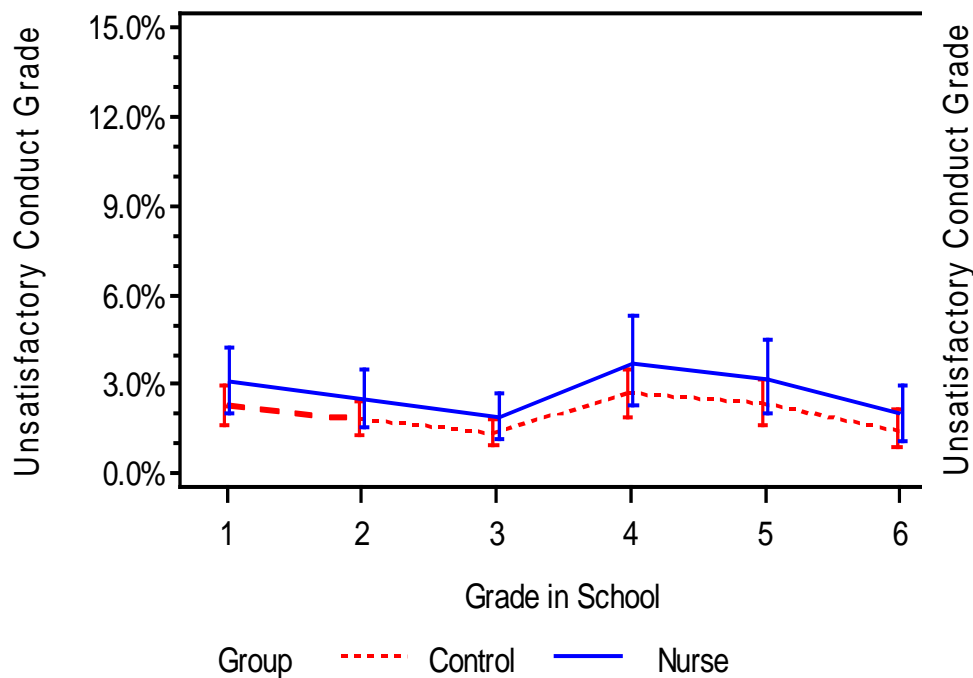
Born to Low-Resource Mothers



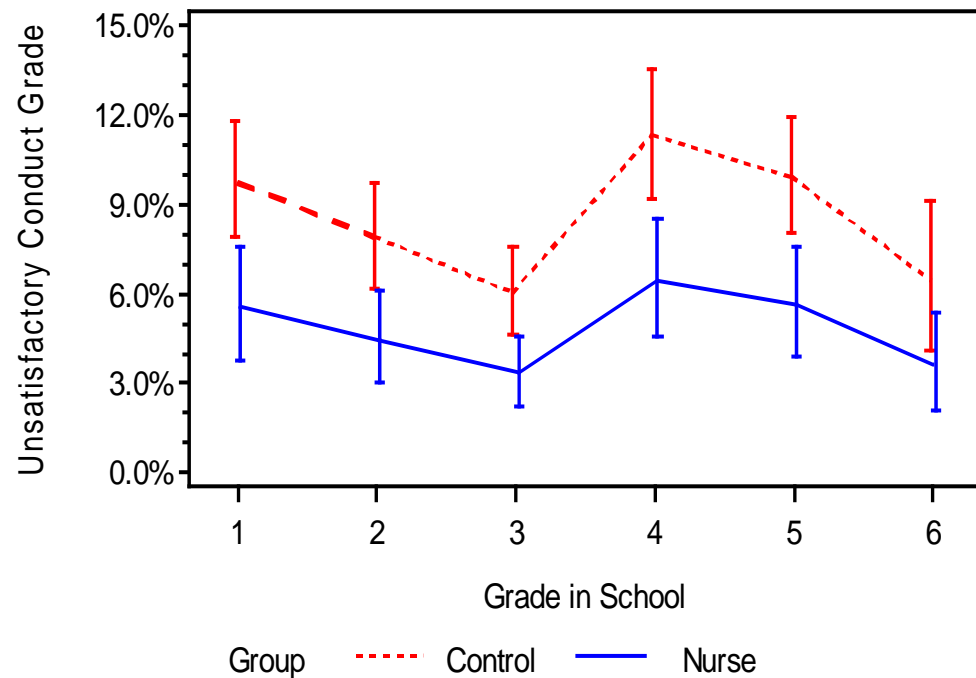
$p=.009$, Effect Size = 0.29

% Unsatisfactory Conduct Grades Memphis Grades 1- 6

Least Square Means (from T|S G model) Females



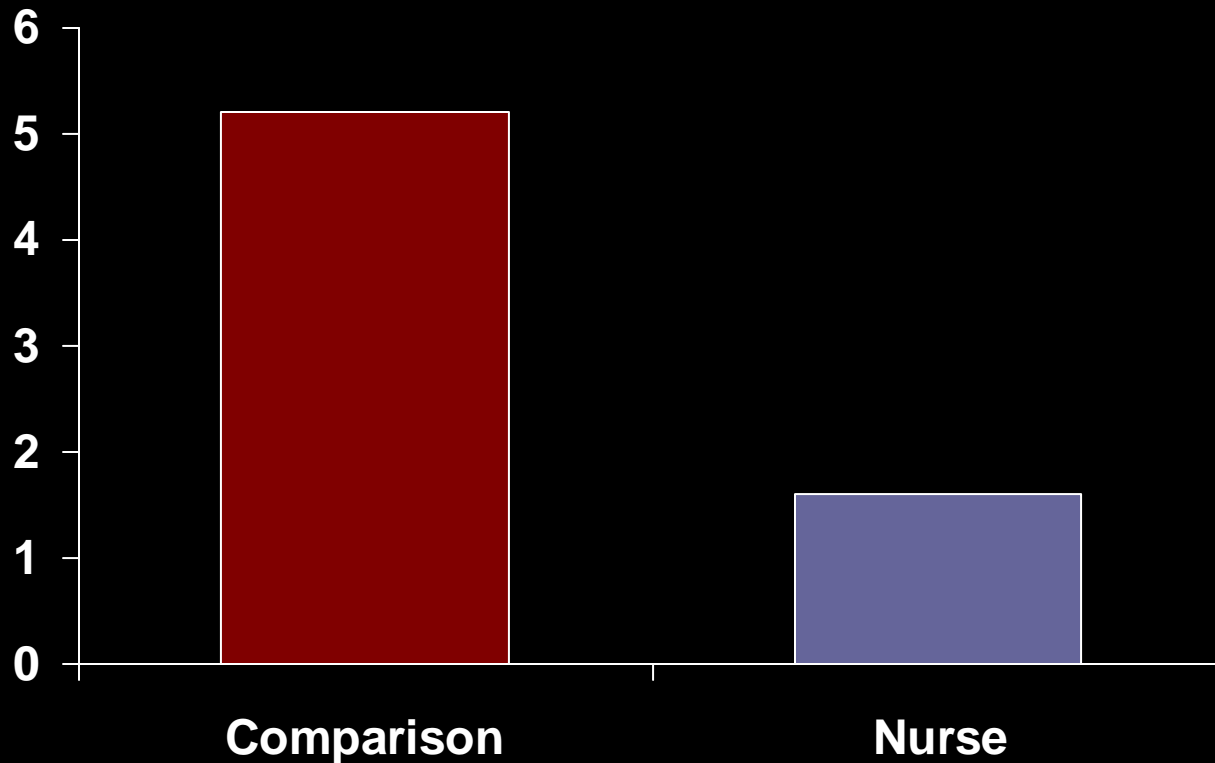
Least Square Means (from T|S G model) Males



OR females = 1.47, p=.399

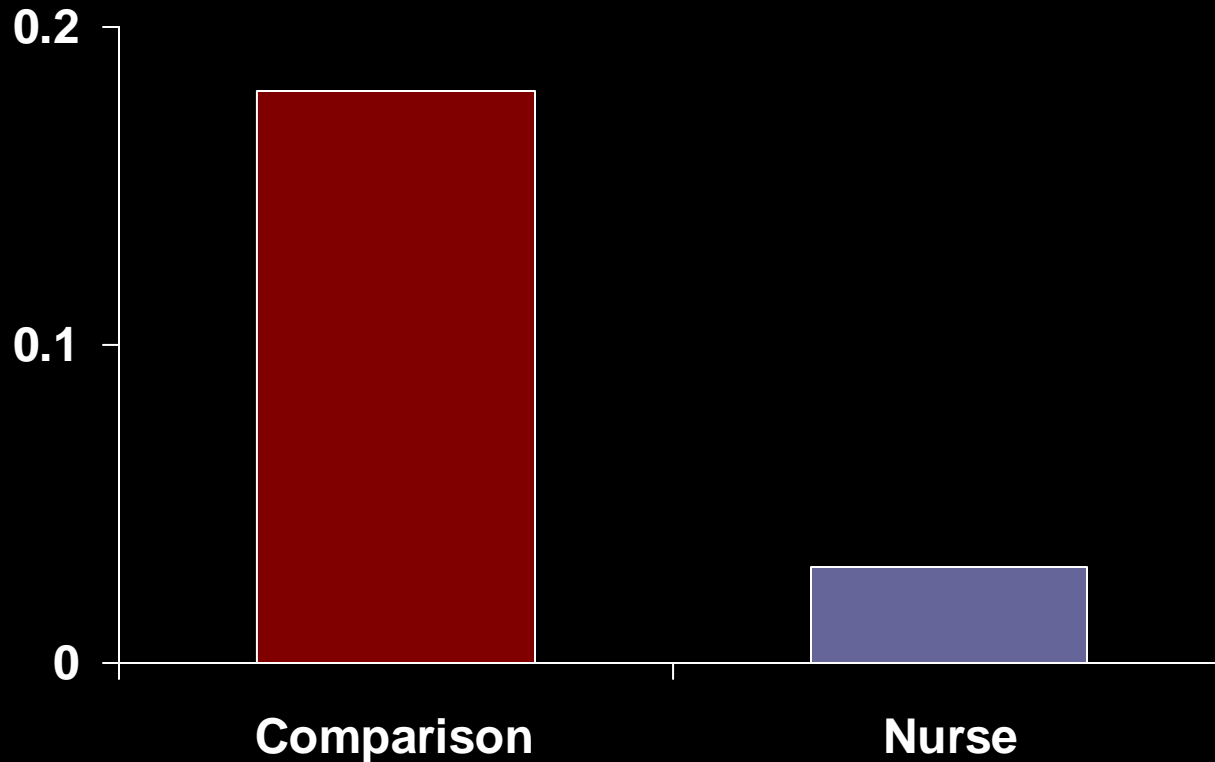
OR males = 0.55, p =.054

% Used Tobacco, Alcohol, or Marijuana Memphis – Child Age 12



P = .024, OR = 0.29

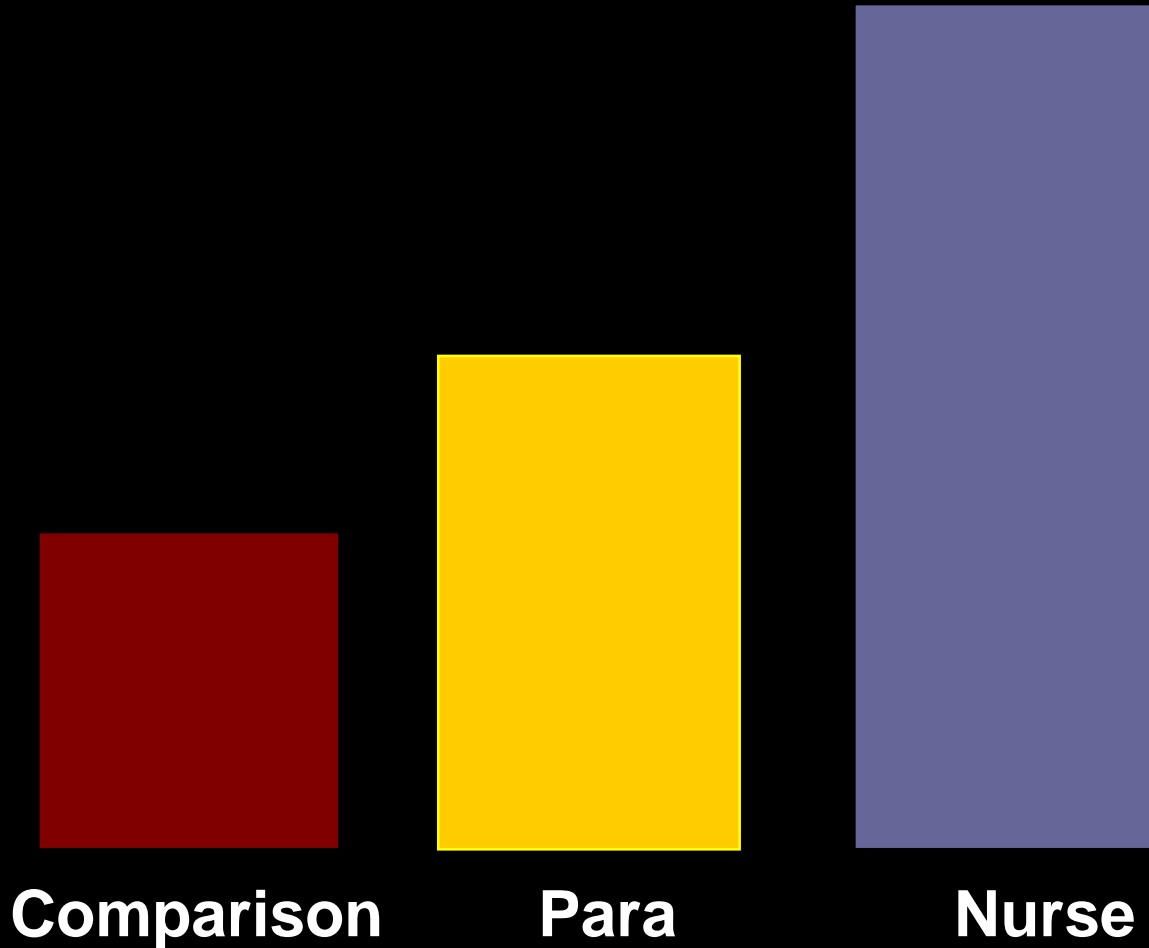
Number of Days Used Tobacco, Alcohol, or Marijuana (Last 30 Days) Memphis – Child Age 12



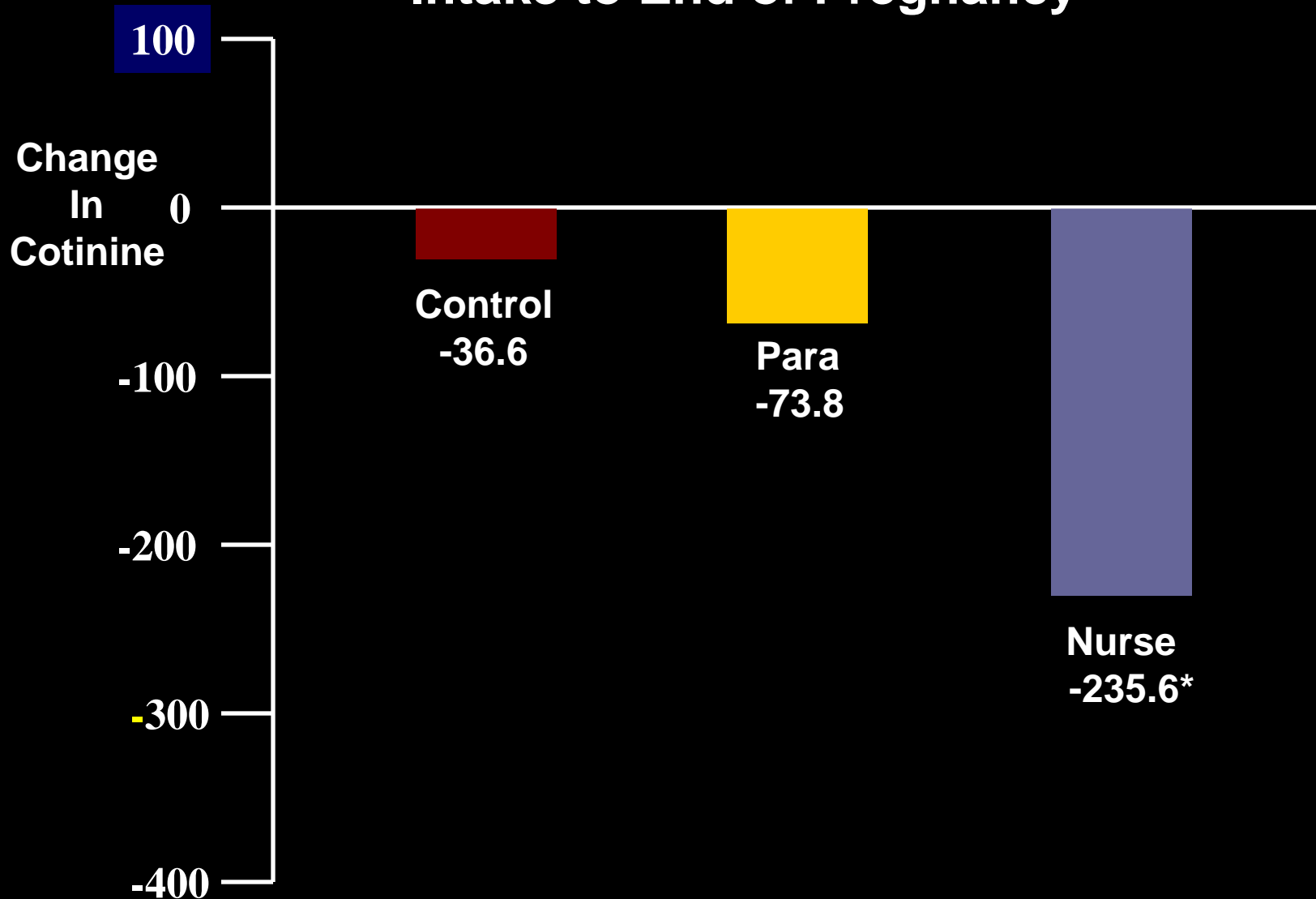
$P < .0001$, OR = 0.17

Pattern of Denver Program Effects

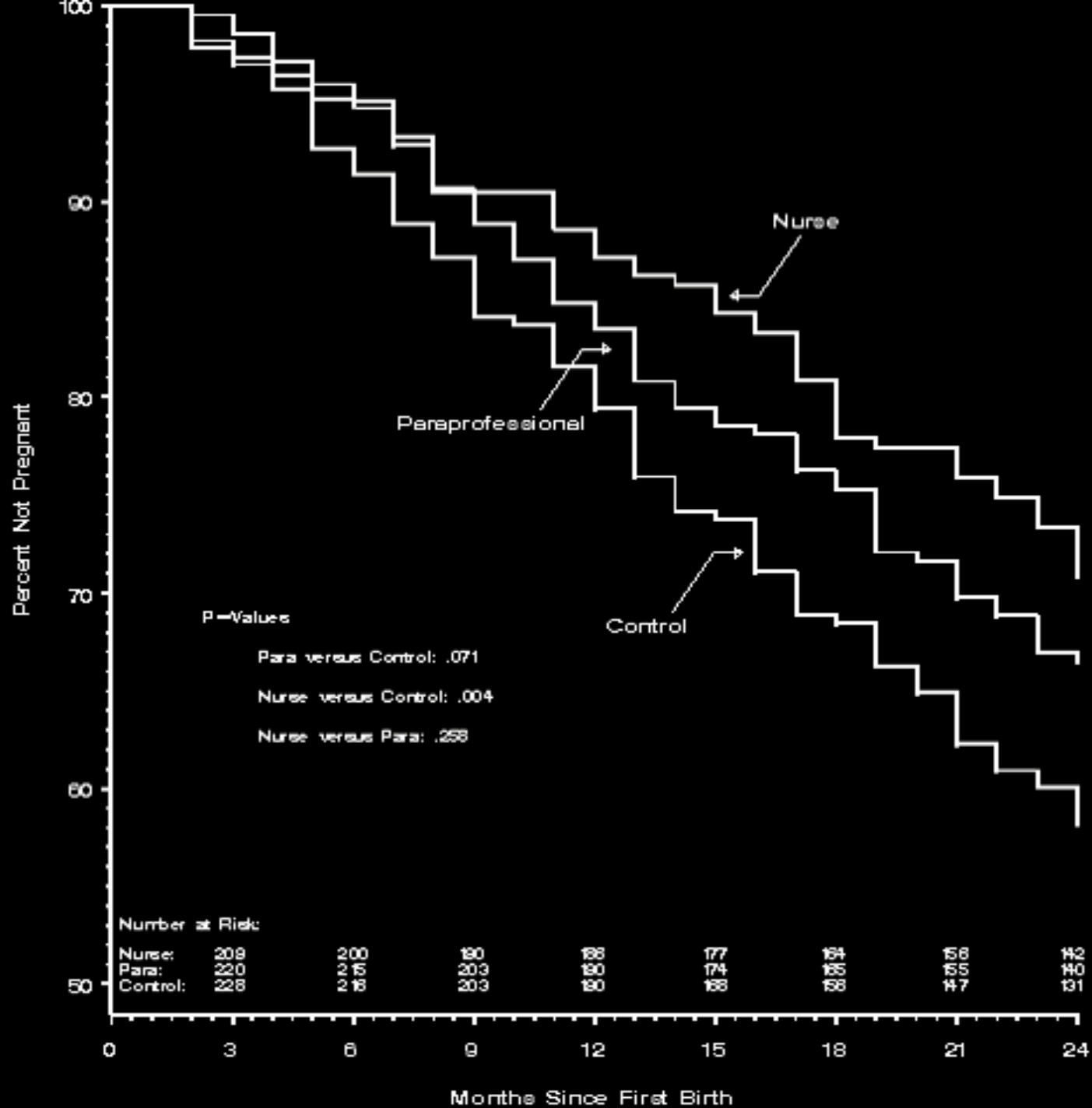
Maternal
and
Child
Functioning



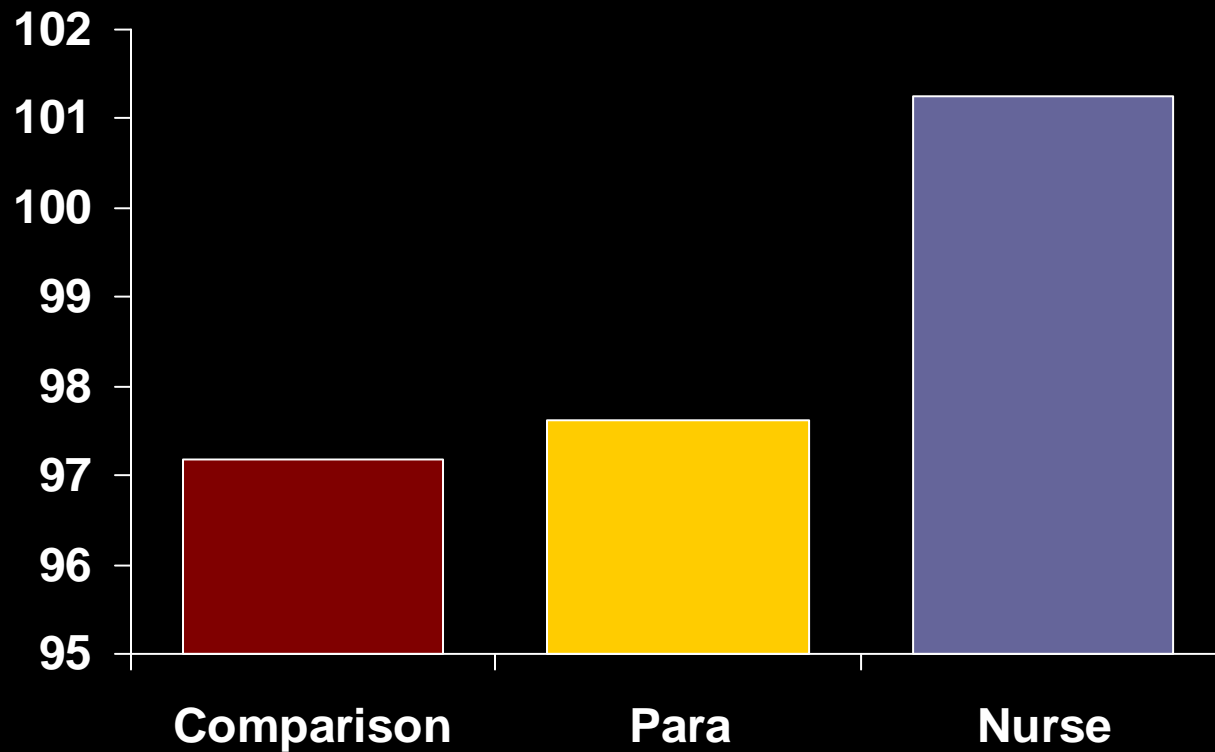
Change in Cotinine From Intake to End of Pregnancy



*Pc-n < .05

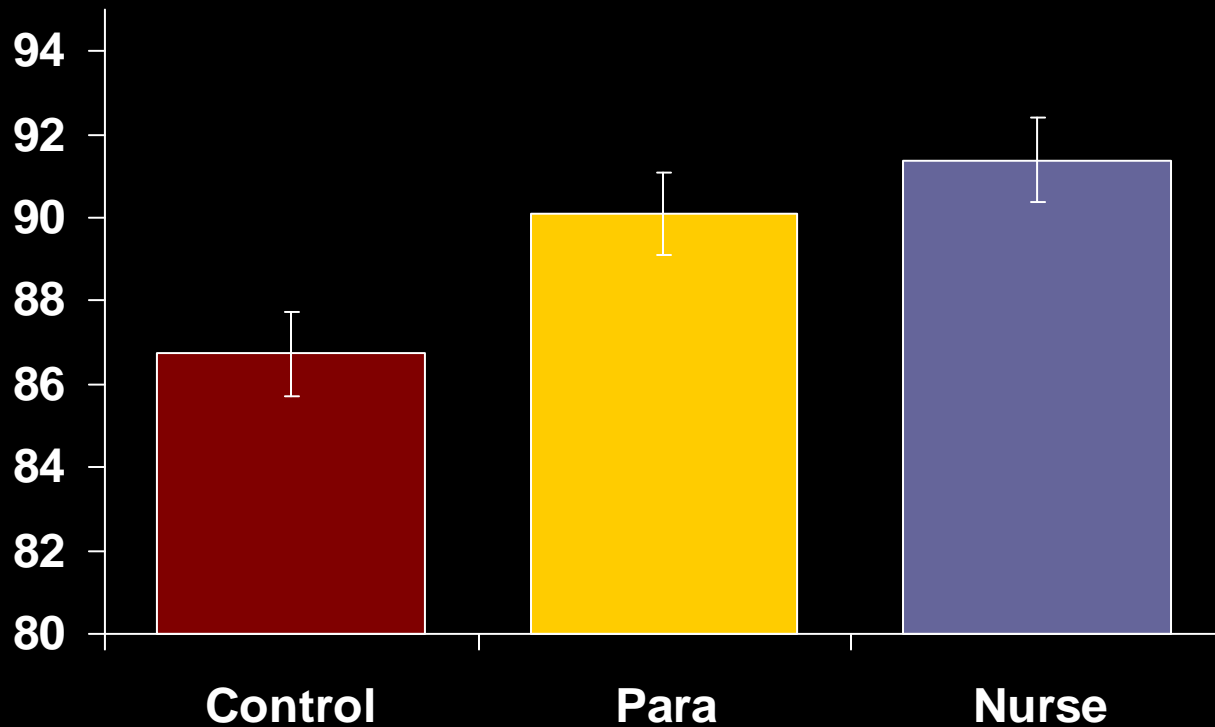


Preschool Language Scale 21 months (Born to Low-Resource Mothers)



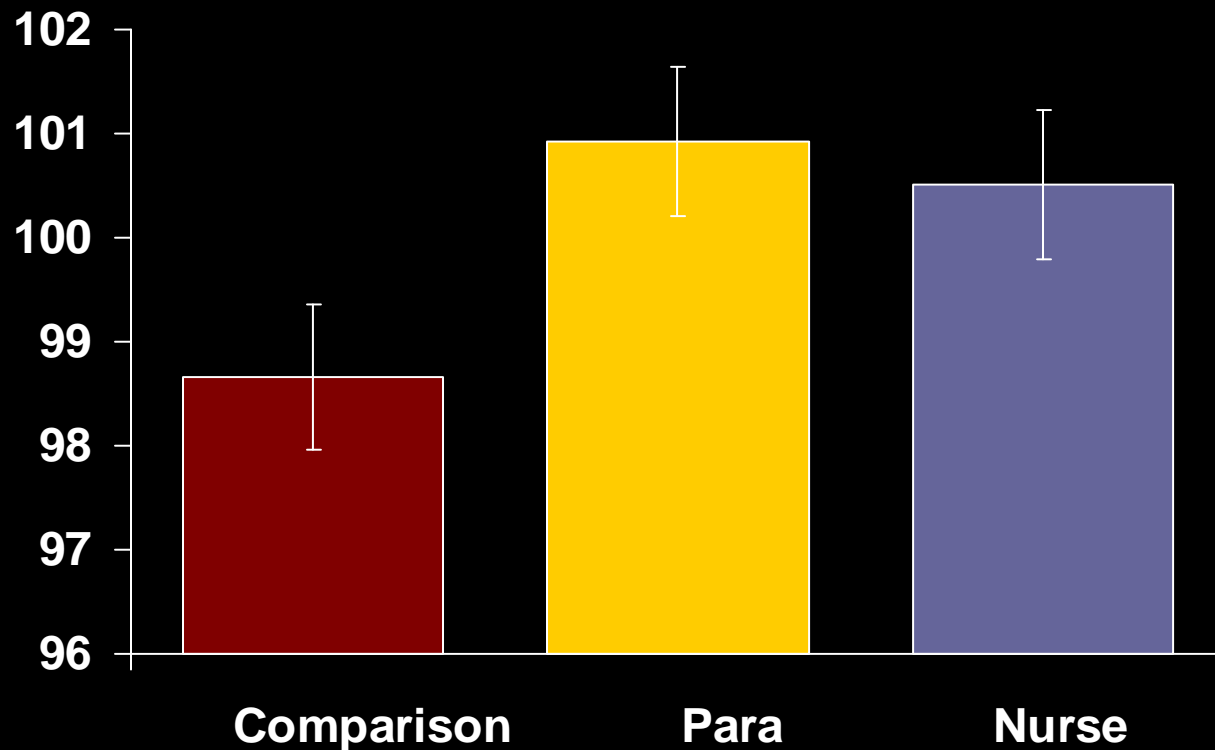
$P_{C-N} = .04, ES = .40$

Total Preschool Language Scale 4 Years (Born to Low-Resource Mothers)



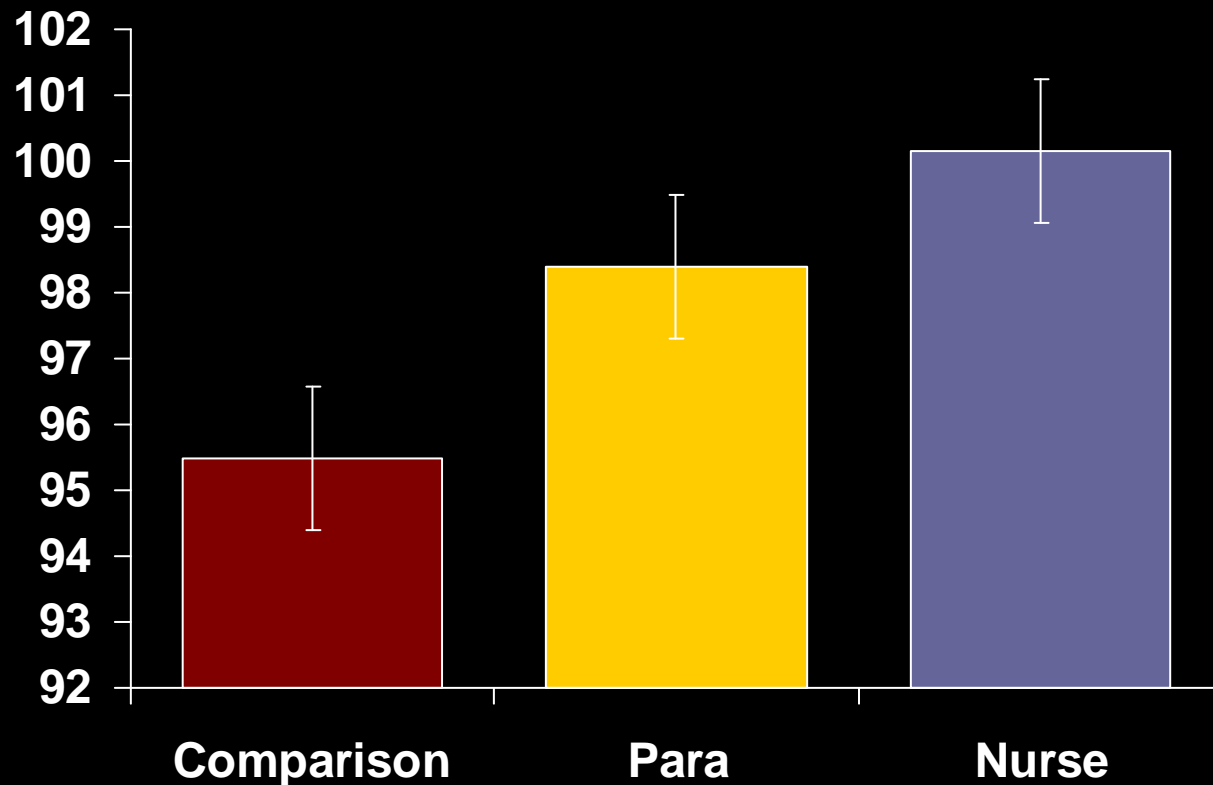
$P_{C-P} = .13, ES = .23; P_{C-N} = .04, ES = .31$

Sensitive/Responsive Interaction 4 Years (Low-Resource Mothers)



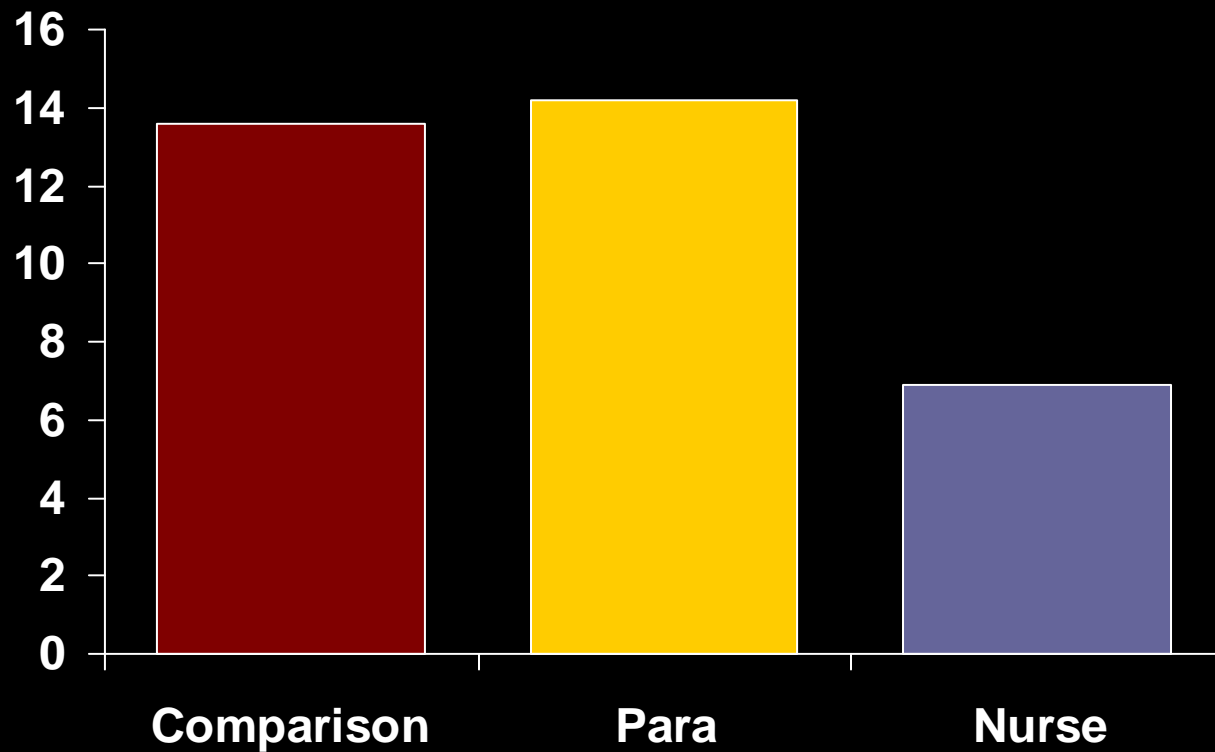
$P_{C-P} = .03$, $ES_{C-P} = .23$; $P_{C-N} = .06$, $ES_{C-N} = .18$

Executive Functioning Index - 4-Years (Born to Low-Resource Mothers)



$P_{c-p} = .06$, $ES = .29$; $P_{c-n} = .000$, $ES = .47$

% Domestic Violence – 4 Years



$P_{C-P} = .88$, $OR_{C-P} = 1.05$; $P_{C-N} = .05$, $OR_{C-N} = .47$

Benefits Minus Costs of Child Welfare & Home Visiting Programs

Nurse Family Partnership	\$17,180
Home Visiting for at-risk mothers/children	\$6,197
Parent-child interaction therapy	\$3,427
System of care/wrap around programs	-\$1,914
Family Preservation Services Programs	-\$2,531
Healthy Families America	-\$4,569
Comprehensive Child Development Program	-\$37,397
Infant Health and Development Program	-\$49,021

Summary Report:

<http://www.wsipp.wa.gov/rptfiles/04-07-3901.pdf>



FROM SCIENCE TO PRACTICE

- **Nurturing Community, Organizational, and State Development**
- **Training and Technical Assistance**
- **Program Guidelines**
- **Clinical Information System**
- **Assessing Program Performance**
- **Continuous Improvement**



