Evaluation of Medicaid Medical Homes for High Risk Pregnant Women in Southeast Wisconsin

Final Report to the Wisconsin Department of Health Service

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Evaluation Goal and Objectives

Research Goal:
To determine if the medical home model is effective in improving birth outcomes among BadgerCare Plus (Medicaid)-enrolled high-risk women in Southeast Wisconsin.

Objectives/Specific Aims

1. Measure participating clinics against: a) their individual benchmark measures for the process of prenatal and postpartum care, b) fidelity of implementing the contractual parameters and other attributes of the medical home pilots, and c) how the clinic intervention differs from pre-program standard care.
2. Conduct a pre-post impact analysis employing a concurrent control group to estimate the program's effects on birth outcomes for patients who receive health care from clinics participating in the pilot intervention.

April 4, 2015 *AAFP News*

State Medicaid Programs Drive PCMH Initiatives Forward

THE COMMONWEALTH FUND

About Half of the States Are Implementing Patient-Centered Medical Homes for Their Medicaid Populations

November 5, 2012

NATIONAL CENTER FOR MEDICAL HOME IMPLEMENTATION

NASHP

State Pediatric Medicaid and CHIP Medical Home Initiatives: At-A-Glance Table

Original Investigation

A Statewide Medicaid Enhanced Prenatal Care Program
Impact on Birth Outcomes

JAMA Pediatrics March 2014 Volume 168, Number 3

LeeAnne Roman, MSN, PhD; Jennifer E. Raffo, MA; Qi Zhu, MS; Cristian I. Meghea, PhD

The Pregnancy Medical Home:
Use of the Power of the Medicaid Program to Improve the Standard of Care Across North Carolina

NCMJ VOL. 72, NO. 3
NCMEDICALJOURNAL.COM

Craigan L. Gray

Association Between Participation in a Multipayer Medical Home Intervention and Changes in Quality, Utilization, and Costs of Care

JAMA February 26, 2014 Volume 311, Number 8

Mark W. Friedberg, MD, MPP; Eric C. Schneider, MD, MSc; Meredith B. Rosenthal, PhD; Kevin G. Volpp, MD, PhD; Rachel M. Werner, MD, PhD

Cochrane Database Syst Rev. 2010 Jun 16;(6):CD000198. doi: 10.1002/14651858.CD000198.pub2.

Support during pregnancy for women at increased risk of low birthweight babies.

Hodnett ED[1], Fredericks S, Weston J.

J Womens Health (Larchmt). Mar 2010; 19(3): 443–451.
doi: 10.1089/jwh.2009.1602
PMCID: PMC2867587

Medicaid and Preterm Birth and Low Birth Weight: The Last Two Decades

Emmanuel A. Anum, MBChB, M.P.H., Ph.D.,[1] Sheldon M. Retchin, M.D., MSPH,[2] and Jerome F. Strauss, III, M.D., Ph.D.[1]

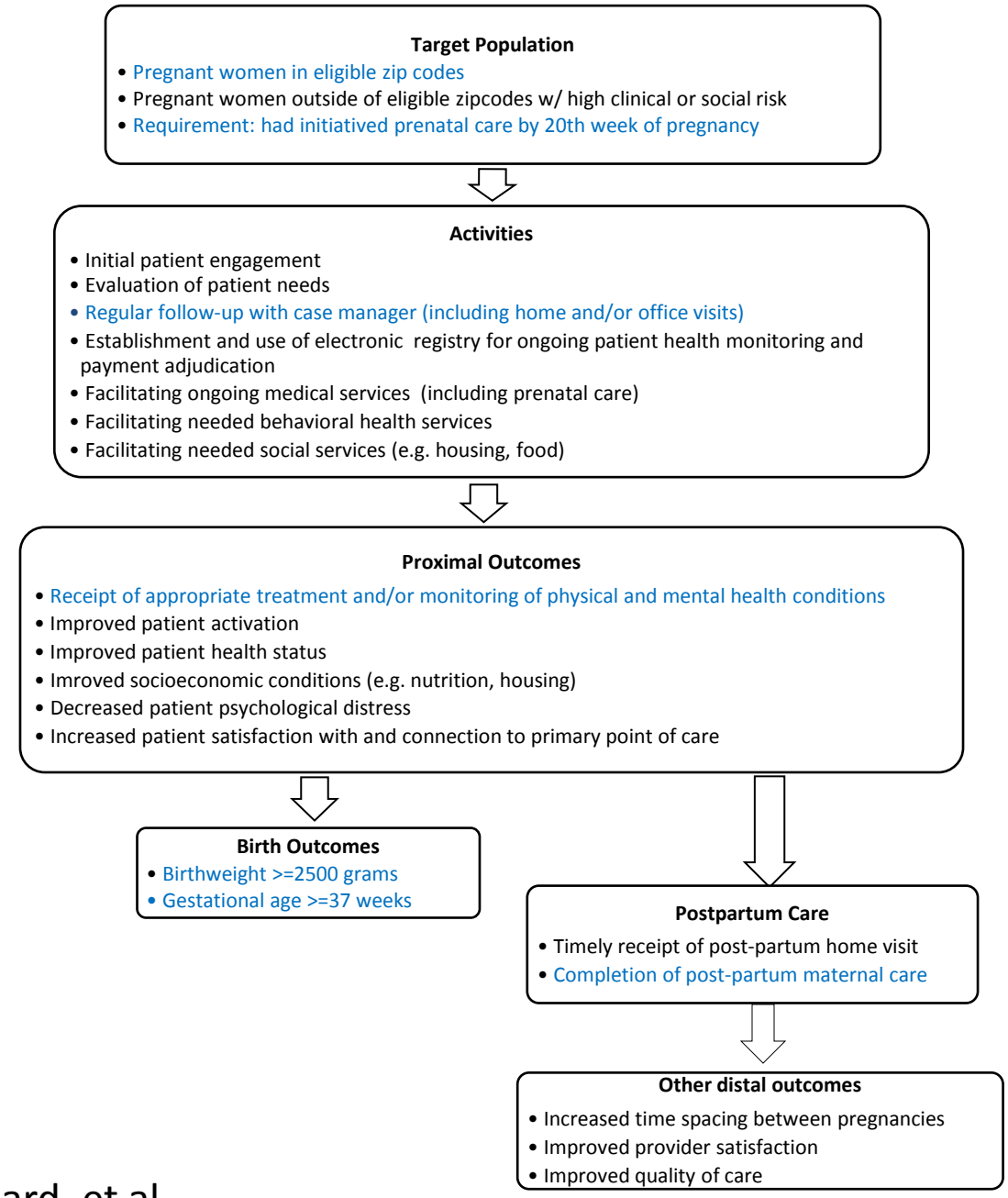
Literature Review

- Compiled 86 evaluation reports or peer reviewed articles on PCMH implementation or on “enhanced” prenatal care, PNCC, or home visiting programs for pregnant women, which may offer similar services to a PCMH.

- 2 systematic reviews of enhanced PNC for low-income women:
  - RCTs: No effect
  - Observational designs: Effects mixed with no definitive conclusions

Summary of Literature

- Overall, the studies of PCMH and enhanced prenatal care generally show some positive results, although improvements in process and outcome measures remain modest or mixed.
- Studies have not yet elucidated what specific elements work and with which populations.
- Implementation PCMH, team-based care, prenatal care coordination, home visiting, and other forms of enhanced prenatal care differs considerably across clinics, sites, or programs.
- Each site may implement the model with varying levels of adherence.



Logic Model

based on Chouinard, et al.

Southeast WI OBMH Pilot

- Target population: 16 clinics serving women in 18 Milwaukee-area zip codes with highest infant mortality rates
- Eligibility:
  - Women in these zip codes (w/some exceptions)
  - Women initiating prenatal care prior to 20th week pregnancy
- Pilot period: 2011-2013
  - Program has been extended and continues today

Southeast WI OBMH Pilot, *cont'd*

- Primary focus: care coordination across medical and, especially, social service needs
- $1,000 increased payment for every patient completing program (conditional on meeting specific requirements)
- $1,000 additional bonus for positive birth outcome

Data

- Enrollment data merged w/encounter data
- Study sample
  - 18,547 women
    - In target zip codes
    - Covered by Medicaid
    - Enter care before 20th week
- Study period
  - Pre-period: 2009-2010
  - Post-period: 2011-2013

Data, *cont'd*

- Treatment clinics (*n* = 9)
  - Clinics that actually implemented
  - Determination from investigator site visits
- Comparison clinics (*n* = 40)
  - All southeastern area clinics serving at least 20 Medicaid-enrolled women in the target zip codes over the pre-period
  - Analytic sample n=10,476 women
- Patient attribution
  - Clinic at which received a majority of visits over pregnancy
  - Tie (rare): clinic w/ most recent visit

Table 1

Clinic Name	Program Start Date	Program End Date	In Impact Analysis?
Aurora Family Care	September 2011	December 2012	No
Aurora Midwifery	July 2011	Not Ended	Yes
Aurora St Luke's	N/A	N/A	No
Froedtert East OB/Gyn	November 2012	Not Ended	Yes
Kenosha Community Health	Aware, some participation January 2011	Not Ended	No
Lifetime OB/Gyn	January 2011	Not Ended	Yes
Columbia St Marys	January 2011	Not Ended	Yes
Wheaton Franciscan Glendale	November 2011	Not Ended	Yes
Waukesha Family Medicine Center	July 2011	Not Ended	Yes
Isaac Coggs Heritage	N/A	N/A	No
MLK Heritage	N/A	N/A	No
Hillside Family	N/A	N/A	No
16th Street	January 2011	Not Ended	Yes
St Joseph’s Women's Health	January 2011	Not Ended	Yes
Wheaton Franciscan Racine	July 2012	Not Ended	Yes

Measures

- Dependent variables:
  - Prenatal: PNCC, dental visit, MHAODA visits
  - Timely postnatal visit
  - Birthweight and gestational age

- Independent variables:
  - Age
  - HH income (% FPL)
  - Race (Black, White, Other/Missing)
  - Hispanic ethnicity
  - Zip code

Data

- Socio-demographic data drawn from Wisconsin's CARES database.
- Merged with health care utilization data drawn from Medicaid encounter and claims records and birth outcome data drawn from the state's vital statistics system.
- Match rates very high: ~98% of Medicaid births in the eligible zip codes had a match to vital statistics data.
- Importantly, match rates were similar across treatment and comparison clinics, as were infant deaths, which were very rare (fewer than 0.5% of sample births for both treatment and comparison clinics).

Methods

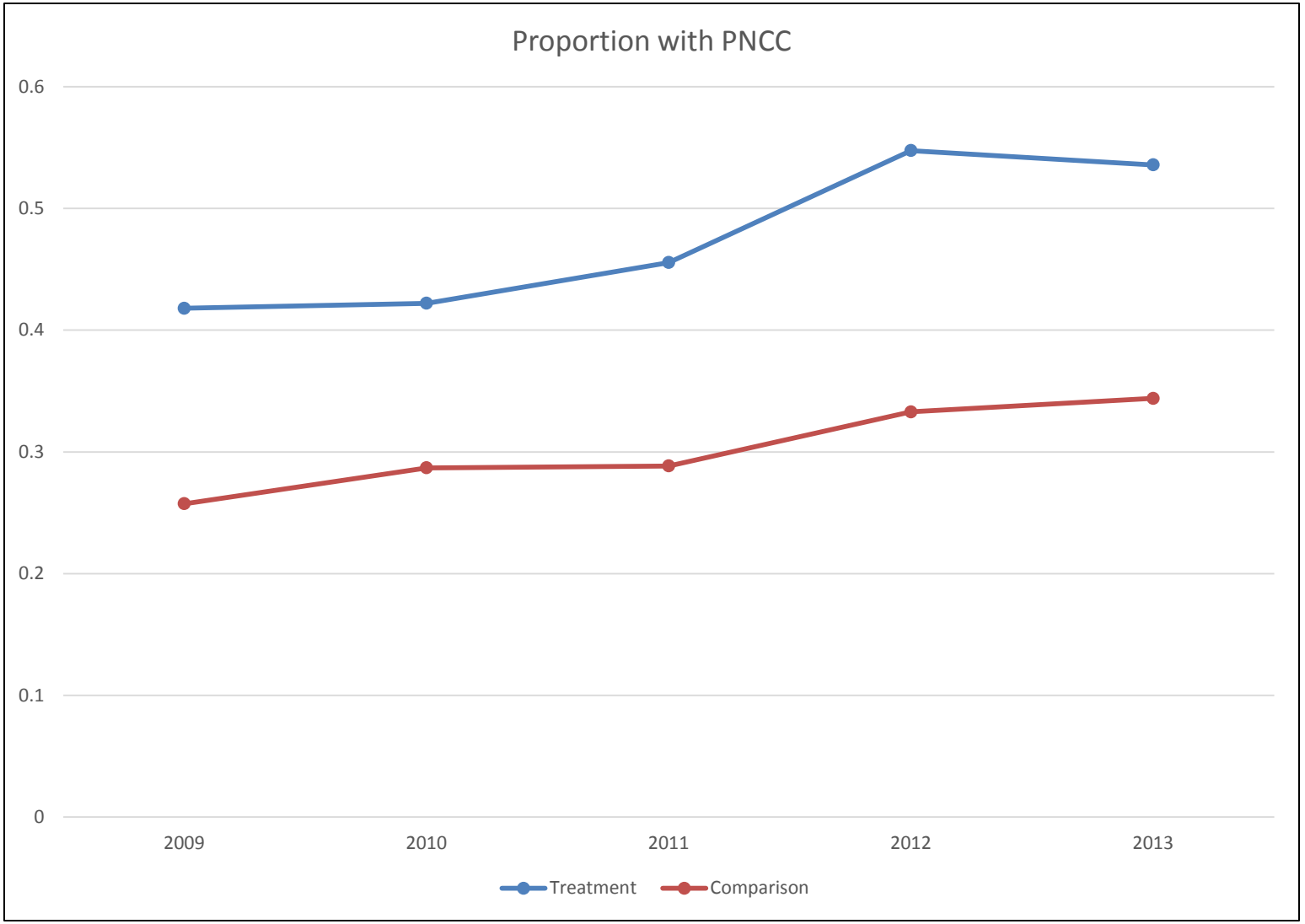
- Generalized difference-in-differences
- Intent-to-treat
- LPM clustered at clinic level
- Individual-level specification using multivariate linear probability regression
- Estimating equation:

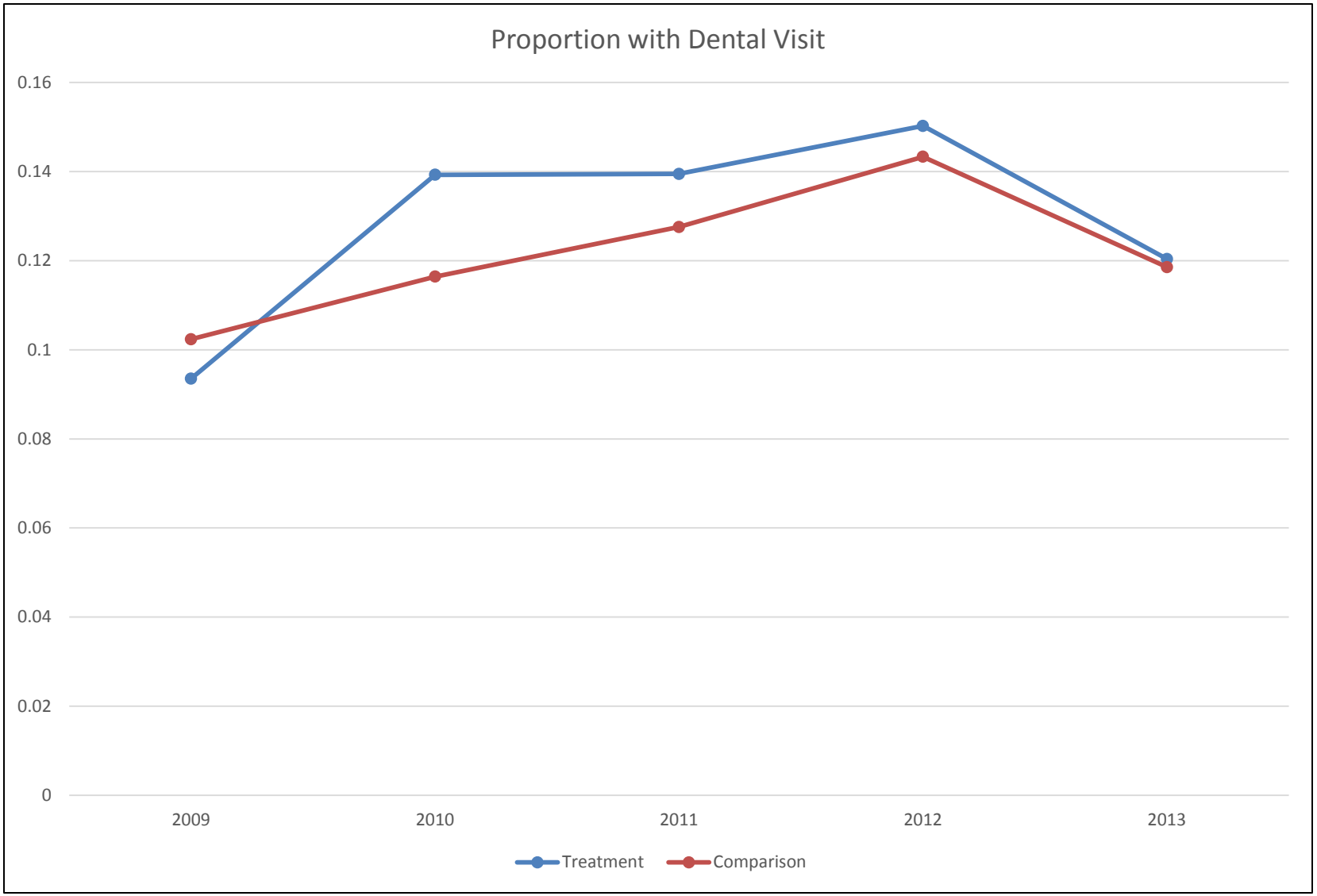
$$Y_{i,c,t} = \beta_1 Year1_{c,t} + \beta_2 Year2_{c,t} + \beta_3 Year3_{c,t} + \boldsymbol{X_{i,c,t}\gamma} + \delta_t + \zeta_c + \varepsilon_{i,c,t}$$

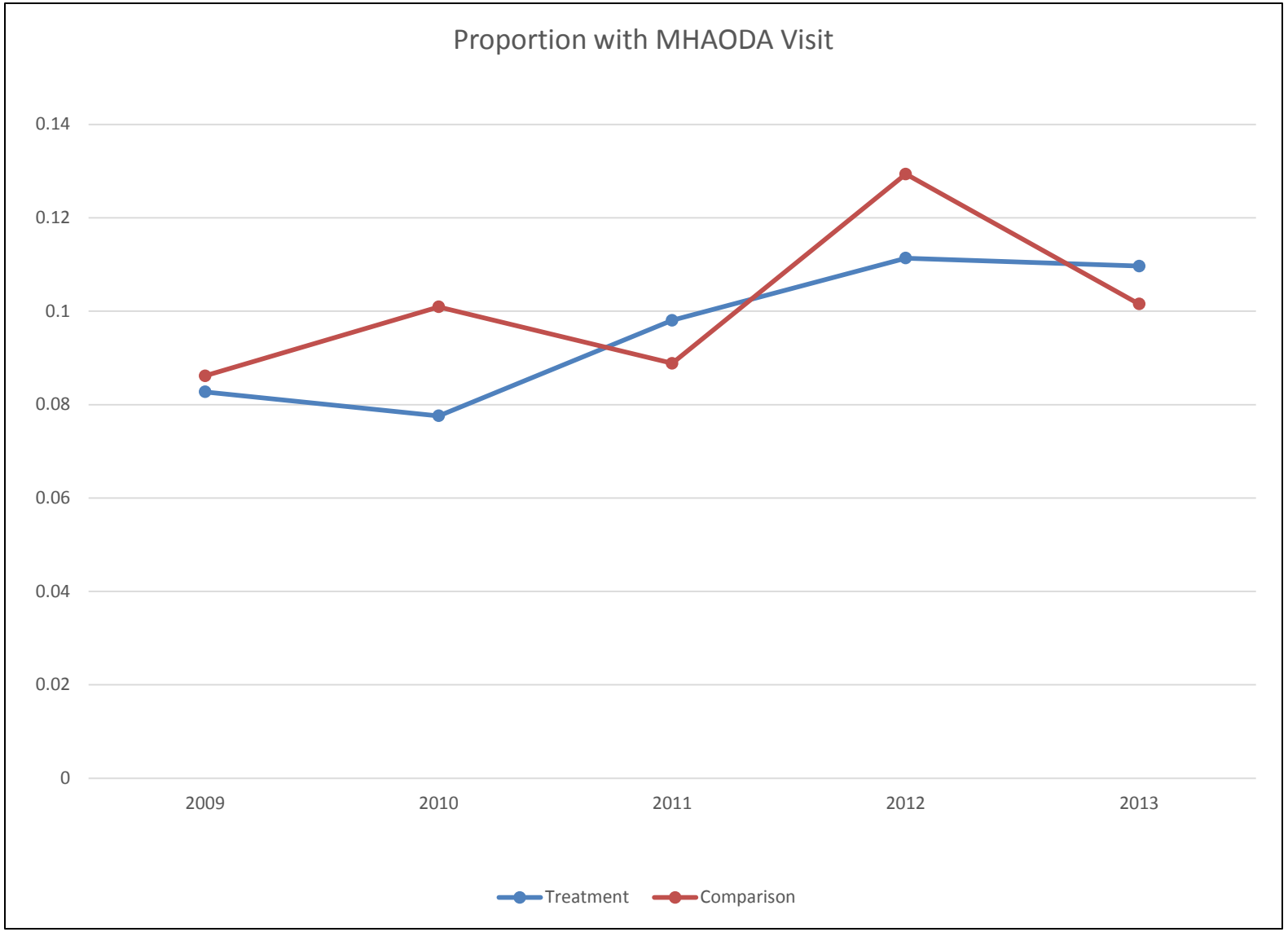
- Robustness: IPTW weighted version of above
- Clinic level regression of tx status on: total # eligible births; % eligible births Hispanic; % eligible births Black; % eligible births Other/Missing race; % eligible births w/timely postpartum visit; % eligible births with prenatal dental visit
- Resulting weight constructed as $1/(phat_{actual})$, implemented as pweight

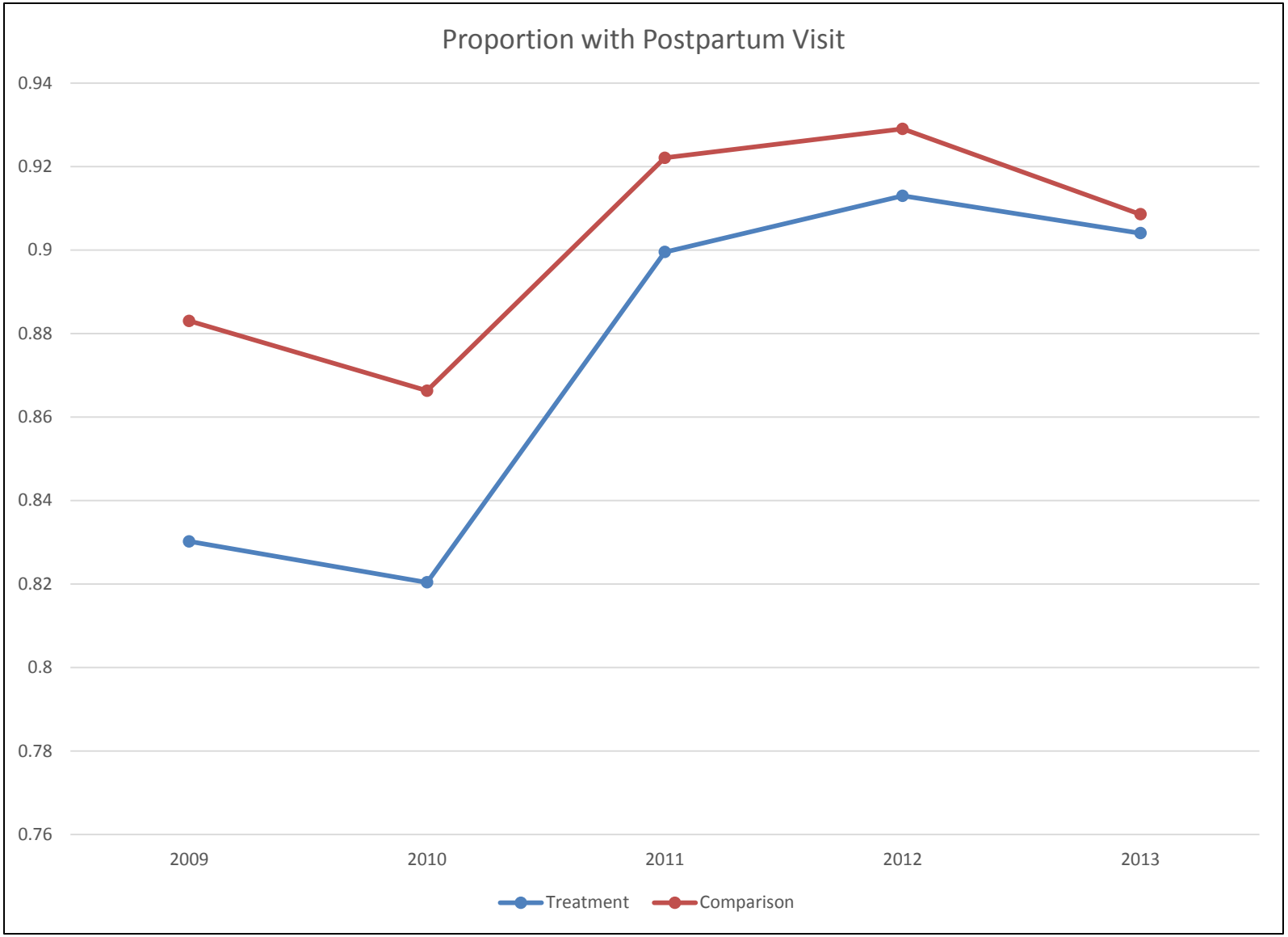
Table 3. Descriptive Statistics Weighted by Inverse Probability of Treatment Weights

	Treatment (*n* = 8,071)	Comparison (*n* = 10,476)	Ho: Treat = Comp
Independent variables (2009-2013)			
Age (mean)	24.9	24.8	$p < 0.24$
HH income as % FPL (mean)	36.0	35.2	$p < 0.28$
Race			$p < 0.01$
Black	57.3	60.6	
White	11.3	12.5	
Other/Missing	31.4	26.8	
Hispanic ethnicity	27.4	21.6	$p < 0.01$
Chronic conditions indicator	21.4	22.3	$p < 0.18$
Smoking indicator	13.9	17.5	$p < 0.01$
	Treatment (*n* = 3,027)	**Comparison (*n* = 4,174)**	**Ho: Treat = Comp**
Dependent variables (2009-2010)			
Any PNCC receipt	38.4	29.4	$p < 0.01$
Any behavioral health care receipt	8.42	10.0	$p < 0.06$
Any dental care receipt	12.3	10.8	$p < 0.11$
Timely postpartum care receipt	86.6	84.2	$p < 0.02$
Gestational age >= 37 weeks	87.9	88.1	$p < 0.86$
Birthweight >= 2,500 grams	91.8	91.9	$p < 0.37$


Proportion with PNCC
0.6
0.5
0.4
0.3
0.2
0.1
0
2009
2010
2011
2012
2013
Treatment
Comparison


Proportion with Dental Visit
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
2009
2010
2011
2012
2013
Treatment
Comparison

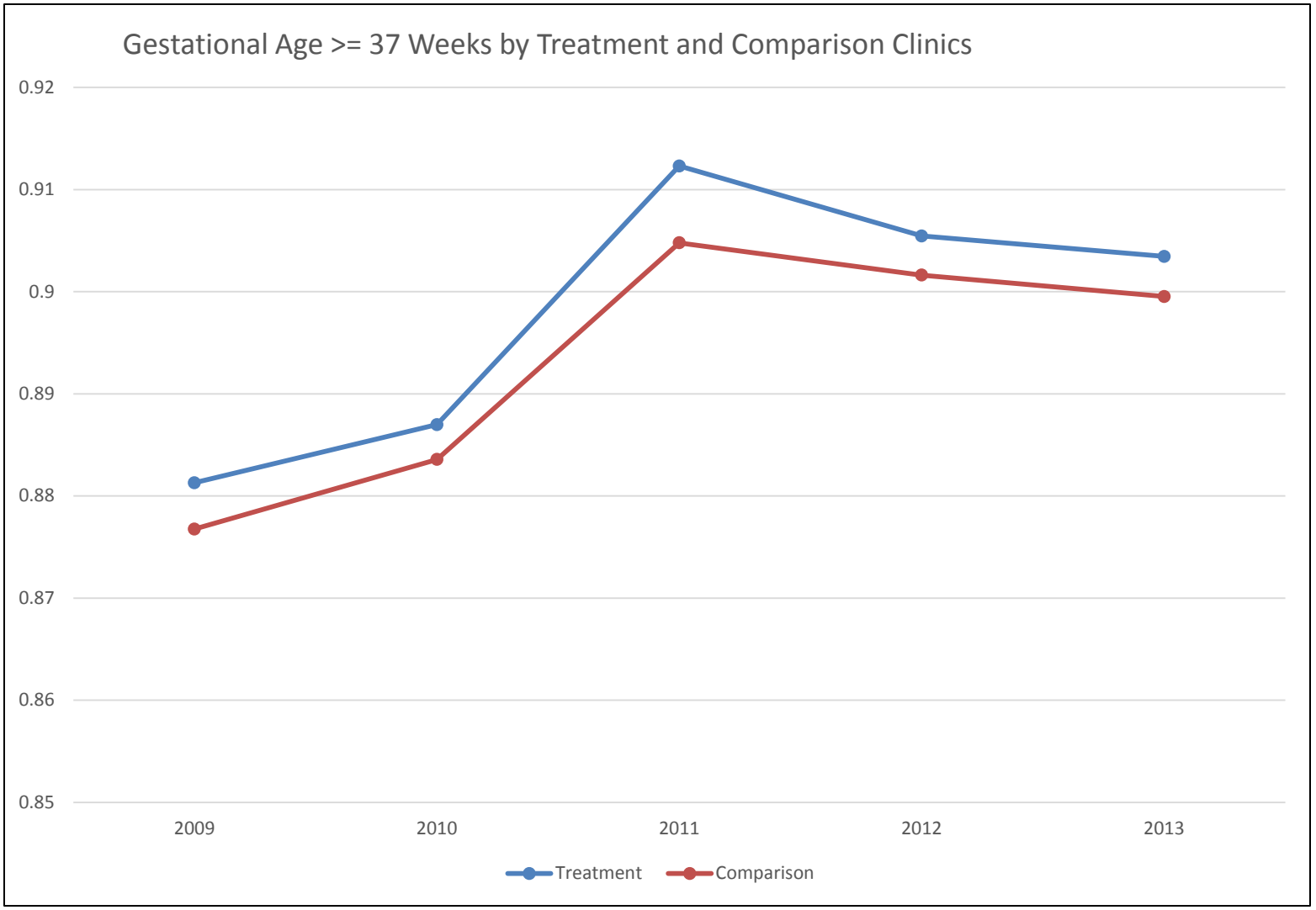

Proportion with MHAODA Visit
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
2009
2010
2011
2012
2013
Treatment
Comparison

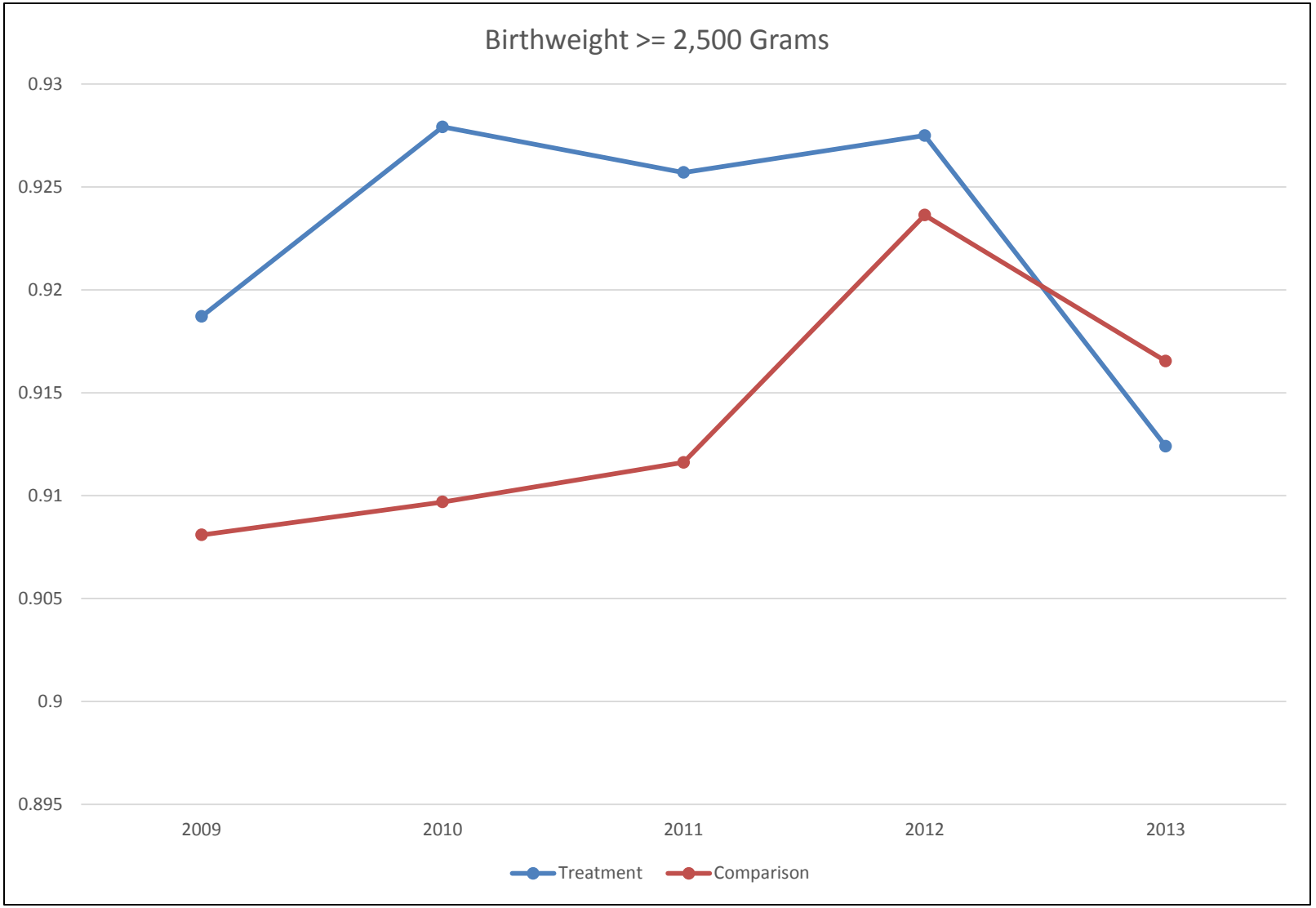

Proportion with Postpartum Visit
0.94
0.92
0.9
0.88
0.86
0.84
0.82
0.8
0.78
0.76
2009
2010
2011
2012
2013
Treatment
Comparison

Regression Results: Utilization Measures

	*Dependent variable: Receipt of **any PNCC***			*Dependent variable: Receipt of **any behavioral health visit***		
	(1)	(2)	(3)	(1)	(2)	(3)
First implementation year	0.072	0.067	0.069	0.014	0.003	0.001
	(0.048)	(0.062)	(0.040)	(0.015	(0.015)	(0.017)
Second implementation year	0.081	0.079	0.085	-0.006	-0.011	-0.007
	(0.089)	(0.062)	(0.059)	(0.11)	(0.006)	(0.006)
Third implementation year	0.107	0.104	0.133	0.025	0.026*	0.028*
	(0.089)	(0.091)	(0.096)	(0.021)	(0.011)	(0.011)
Controls for SES/medical risk?	N	Y	Y	N	Y	Y
Propensity-score weighted?	N	N	Y	N	N	Y
Dep. var. mean in pre-period	0.335			0.088		
	*Dependent variable: Receipt of **any dental visit***			*Dependent variable: Receipt of **Timely postpartum visit***		
	(1)	(2)	(3)	(1)	(2)	(3)
First implementation year	0.019	0.019	0.025	-0.002	-0.002	-0.001
	(0.021)	(0.022)	(0.017)	(0.011)	(0.011)	(0.011)
Second implementation year	0.019	0.019	0.008	0.025	0.025	0.023
	(0.012)	(0.014)	(0.014)	(0.028)	(0.028)	(0.026)
Third implementation year	0.002	0.003	0.001	0.111^	0.108^	0.108^
	(0.030)	(0.030)	(0.028)	(0.064)	(0.063)	(0.061)
Controls for SES/medical risk?	N	Y	Y	N	Y	Y
Propensity-score weighted?	N	N	Y	N	N	Y
Dep. var. mean in pre-period	0.113			0.853		

Note: Estimates are coefficients from linear probability models (n=18,547). Standard errors in parenthesis. All specifications include clinic and year fixed effects and are cluster-corrected at the clinic level. * $p < 0.05$; ^ $p < 0.10$


Gestational Age >= 37 Weeks by Treatment and Comparison Clinics
0.92
0.91
0.9
0.89
0.88
0.87
0.86
0.85
2009
2010
2011
2012
2013
Treatment
Comparison


Birthweight >= 2,500 Grams
0.93
0.925
0.92
0.915
0.91
0.905
0.9
0.895
2009
2010
2011
2012
2013
Treatment
Comparison

Regression Results: Birth Outcomes

Dependent variable: Gestational age >= 37 weeks			
	(1)	(2)	(3)
First implementation year	0.011	0.012	0.012
	(0.008)	(0.009)	(0.008)
Second implementation year	-0.005	-0.005	-0.008
	(0.008)	(0.009)	(0.012)
Third implementation year	-0.002	-0.002	-0.009
	(0.011)	(0.012)	(0.012)
Controls for SES/medical risk?	N	Y	Y
Propensity-score weighted?	N	N	Y
Dep. var. mean in pre-period	0.882		

Dependent variable: Birthweight >= 2,500 grams			
	(1)	(2)	(3)
First implementation year	-0.001	0.001	0.003
	(0.010)	(0.010)	(0.010)
Second implementation year	-0.012	-0.010	-0.008
	(0.008)	(0.008)	(0.009)
Third implementation year	-0.018	-0.016	-0.020
	(0.011)	(0.011)	(0.012)
Controls for SES?	N	Y	Y
Propensity-score weighted?	N	N	Y
Dep. var. mean in pre-period	0.915		

Note: Estimates are coefficients from linear probability models (n=18,547). Standard errors in parenthesis. All specifications include clinic and year fixed effects and are cluster-corrected at the clinic level.

Summary of Findings: Statistical

- No impact on *birth outcomes*, including birthweight or gestational age.
- Statistically imprecise estimates for the receipt of *prenatal care coordination (PNCC)* and *dental services*: no meaningful conclusions.
- Positive, statistically significant and clinically meaningful impacts on the likelihood of *behavioral health* receipt in the third year of program implementation.
  - Note that overall levels of behavioral health receipt remained very low across both treatment and comparison clinics.
- Small, statistically insignificant increase in the likelihood of receiving timely postpartum care in the first two implementation years, growing in the final pilot year.
  - These impacts only reached statistical significance at the 10% level, so should be treated as suggestive.

Study Limitations

- Non-random selection of clinics into pilot
  - however, impact estimates are consistent across all specifications, including the propensity-score matched difference-in differences model.
- No per-protocol analysis possible due to failure of uniform patient enrollment and registration system.
- Limited available measures due to global billing.

Fidelity of Implementation

- Clinics that DHS had identified as OB Medical Homes were asked, in March/April 2011, then immediately post-implementation in October 2012, and finally in September 2015, to complete a survey instrument adapted from the Commonwealth Fund's Safety Net Medical Home Initiative.
- Survey asked about a range of operational features, and was designed to allow comparison of pre- and post-pilot service provision and process measures.

Fidelity of Implementation

- Out of 14 pilot OBMH Clinic or Clinic Groups identified by DHS,
  - six individual clinics or clinic groups completed both the pre- and post-surveys.
  - two clinics provided two post-intervention surveys but had not completed their pre-intervention surveys.
- Results may not reflect the implementation of the OBMH pilot site in aggregate.

- It is likely that the clinics that did not return their surveys may differ in some significant manner in their care delivery practices and/or in the manner than they did or did not implement the pilot.
- If the non-reporting sites made fewer changes to their practices, then the results reported by the reporting sites will overstate the effect of the OBMH on clinic practices in aggregate.

Site Visits: September – December 2013

	Number of sites	# of persons interviewed
Clinics	15	75
HMOs/Health Plans	3	12
Total Site Visits	**18**	**87**

Interviews by Occupation Type	
Physicians	14
Nurses/Nurse PNCC	19
Nurse/Midwives	7
Medical Assistants	11
Social Workers/PNCC	9
Customer Service Rep/Front Desk	9
Medical Office Directors/Administration	7
Medical Office Other Admin	3
Insurance: Directors or Executives	4
Insurance: Other Administration	4
Total # of persons interviewed	**87**

Implementation Challenges

- Lack of clearly articulated roles and responsibilities and clear communication protocols among and between HMOs and clinics and among clinic staff.
  - Seems to have compromised clinic participation and documentation, patient outreach and engagement.
  - May have affected the observed outcomes.

Case Studies: October-November 2015

- Clinic Staff asked to recruit participants.
- Participants offered transportation, childcare, wide flexibility in scheduling, and a $25 Walgreens gift card.
- Ultimately, interviewed 4 mothers across 3 sites.
- May not provide generalizable information about OBMH initiative, but…
- Offers view of lived experiences, anecdotal perspective that suggests potential program strengths and areas in need of correction.

Summary of Findings: Site Visits and Interviews

- Increase in patient and provider satisfaction, along with more active patient engagement with their care team.
- However, the program demonstrates
  - continuing inconsistencies in the nature of program delivery and identification/inclusion of patients,
  - incentives that promote selection bias to the exclusion of highest need patients, and
  - lack of continuity of care through the inter-partum period.
- Need stronger articulation of process performance metrics beyond clinical care, including specific aspects of care-coordination.
- These challenges may be addressed with payment incentives specifically rewarding fulfillment of social supports and services.

Recommendations

1. Require participation by all clinics in a defined geographic area where their OB practices are serve a specified percentage of Medicaid women, regardless of zip code of mother's residence.
2. Require offer of programming to all high risk women, with no selection by providers outside of the program's inclusion criterion, and do not require early initiation of prenatal care.
3. Develop a strong well-defined participation agreement between the clinics and the HMOs.
4. Deliver a well-structured orientation program for clinic leaders and clinic staff, with clear expectations for program implementation and reporting.

Recommendations, continued

5. Measure and reward clinic performance on process measures in the medical home inventory, a range of metrics pertaining to the assurance of social service support and delivery (food, housing, safe environment, etc), and the integration of behavioral health and primary care.
6. Address within the model the lingering needs of mothers after the 60-day post-partum period as it affects post-neonatal well-being of the child, mothers' spacing of next pregnancy, and the health of the mother at the outset of the next Medicaid-supported pregnancy.

Questions and comments always appreciated.

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