

PREGNANCY INTENTION AND
BREASTFEEDING DURATION:
*an analysis of the Oregon PRAMS 2005
dataset*

MPH Thesis Presentation
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Presentation Outline

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 - Pregnancy intention (PI)
 - Pregnancy Risk and Monitoring System (PRAMS)
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Presentation Outline

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 - Results
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 - Limitations
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- Future Research

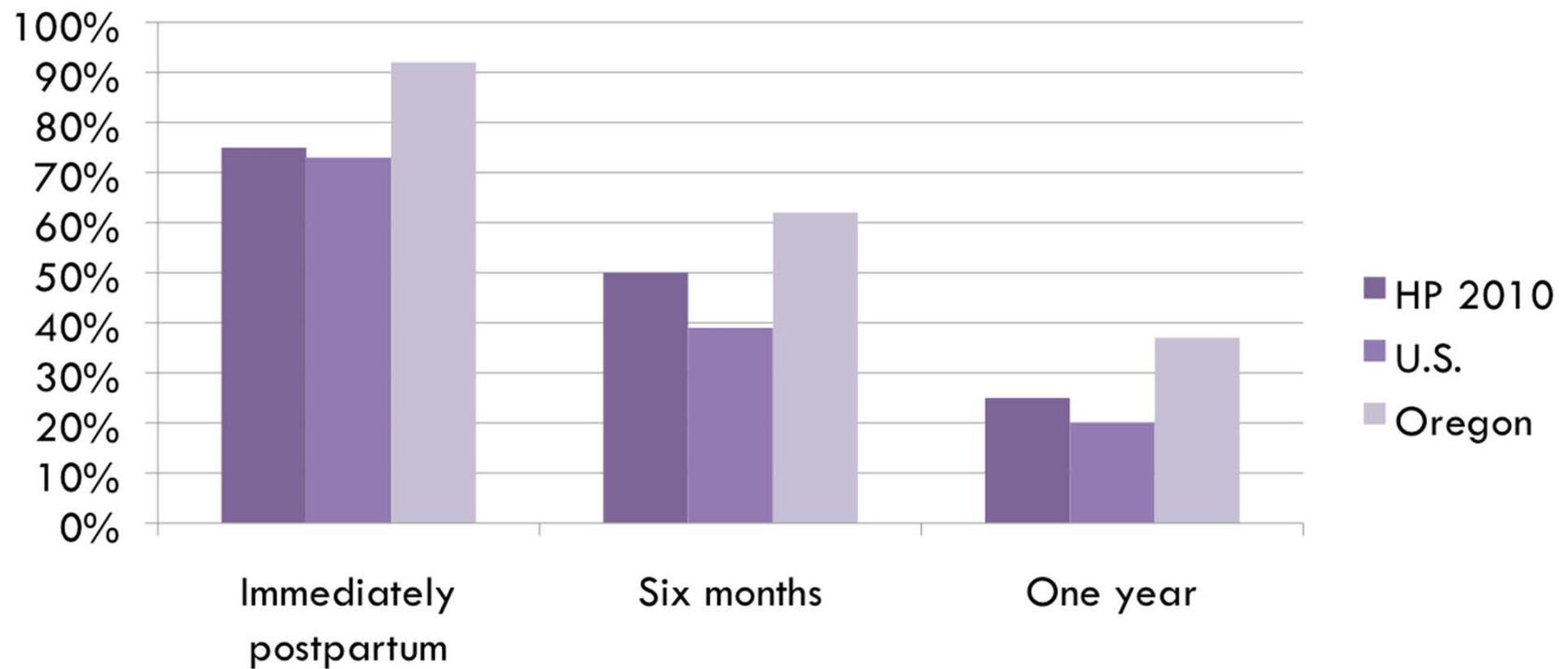
Background: Breastfeeding

- Breast milk: complete, economic, valuable source of infant nutrition
 - Superior immune function
 - Lower post-neonatal mortality
 - Higher cognitive function
 - Mother-infant emotional bond
- Mother benefits
 - Cost savings
 - Health advantages

Background: Breastfeeding

- Breastfeeding trends
 - Generational
 - Geographic
 - Temporal
- AAP recommendations
 - At least 12 months
- Healthy People 2010 recommendations:
 - Immediately postpartum: 75%
 - Six months: 50%
 - One year: 25%

Breastfeeding



Background: Breastfeeding

- Breastfeeding Definitions
 - Exclusive breastfeeding
 - Nonexclusive
- Time periods of measurement
 - Vary between surveys
 - Initiation: any breastfeeding after birth
 - Duration: 8-10 weeks, 2-3 months, 6 months, 10-12 months
- Many associated risk factors
 - Pregnancy intention

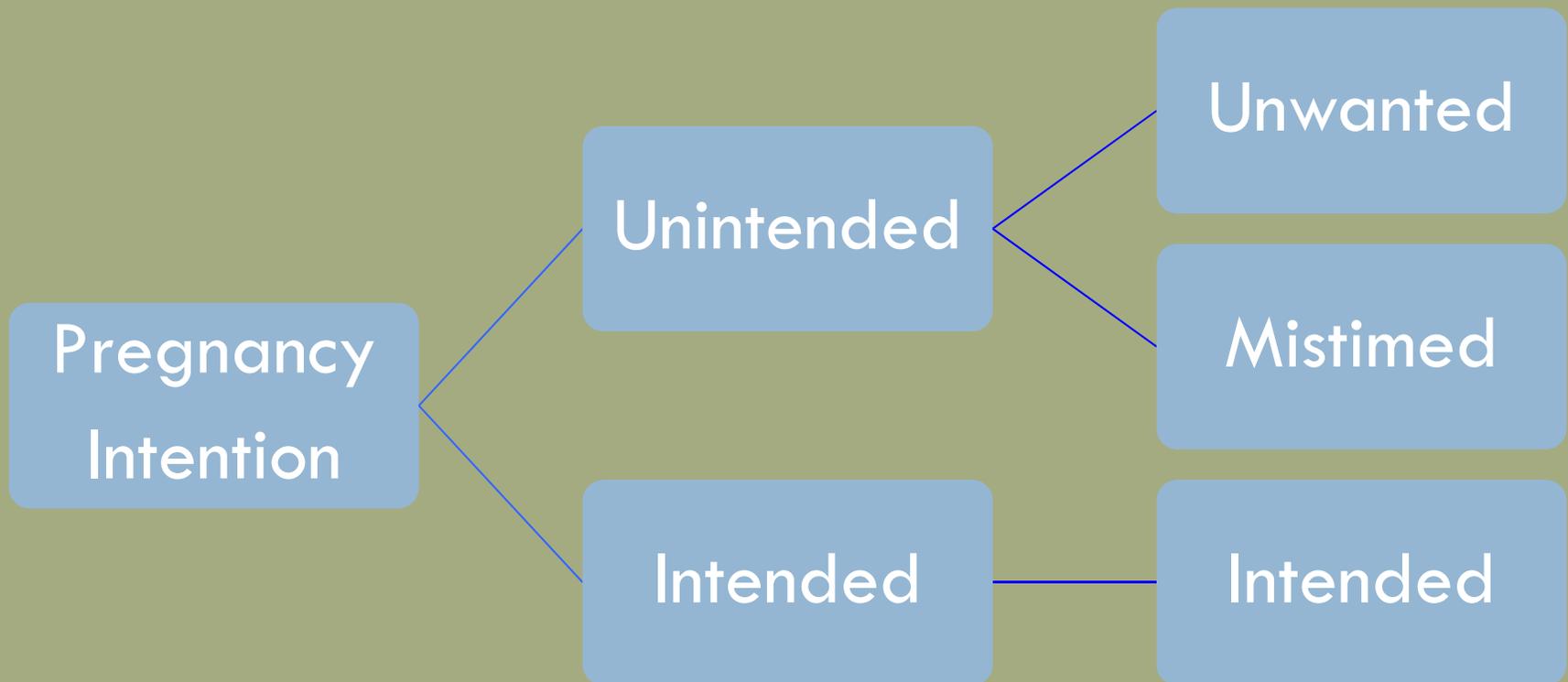
Background: Pregnancy Intention

- Unintended Pregnancies:
 - Nearly half (49%) of yearly pregnancies in the U.S.
 - Non-aborted pregnancies lead to unintended births
 - Of these:
 - 2/3 are mistimed
 - 1/3 unwanted
- Associated with outcomes of:
 - Less and later prenatal care
 - Higher mortality rate for infants
 - Lower birth weight
- Healthy People 2010 recommendations:
 - Decrease prevalence of unintended pregnancies to < 30%

Background: Pregnancy Intention Assessment

- First assessed in 1941
- Currently researched by several large studies:
 - National Survey of Family Growth (NSFG)
 - Pregnancy Risk Assessment Monitoring System (PRAMS)
 - National Longitudinal Survey of Youth (NLSY)
 - Demographic and Health Surveys (DHS)
- Classic categories: Intended vs. Unintended
 - Mistimed included in alternate definitions

Background: Pregnancy Intention Classification



Background:

Pregnancy Intention Assessment

- Intended vs. Unintended
 - Imperfect classification
 - Weak predictive power
 - Maternal ambivalence
 - Male partner influence
 - If *mistimed* women are at less risk than *unwanted*, could better target breastfeeding resources at smaller group of women

Background: Breastfeeding and Pregnancy Intention

- Research questions:
 - Is an intended infant more likely to be breastfed than an unintended infant?
- Association demonstrated in prior studies
 - Older data sets
 - Lack of important covariates
 - Used populations not consistent with highly prevalent breastfeeding
 - No direct comparison of *mistimed* vs. *unwanted*

Background: Literature

- Dye et al. (1997)
 - *Mistimed vs. intended*
 - East coast population
- Taylor and Cabral (2002)
 - *Mistimed vs. intended*
 - Alternate pregnancy intention variable formation
- D'Angelo et al. (2004)
 - *mistimed vs. unwanted*
 - BF initiation, univariate analysis

Background: PRAMS

- PRAMS is a Centers for Disease Control (CDC)-created surveillance system, gathering information on the health of mothers and infants since 1987
 - Includes: breastfeeding, health behaviors, contraception, pregnancy intention
 - Response rates: 65-75%
- Oregon PRAMS is based on CDC-PRAMS
- Administered by the Oregon Department of Human Services

Study Objectives

- Use a 3-category pregnancy intention variable to answer the following research questions with Oregon PRAMS 2005 data:
 - *What is the association between pregnancy intention and any breastfeeding at eight weeks postpartum?*
 - *Are unwanted pregnancies less likely than mistimed to breastfeed ≥ 8 weeks?*
 - *Could breastfeeding resources be more precisely directed?*

Methods: PRAMS Methodology

- Monthly stratified random sample selected from Oregon birth certificates
 - Oversamples: racial minority women, low birth weight whites
 - Analysis weights: (1) sampling, (2) non-response, (3) non-coverage
- Mail or telephone contact with survey
 - Mothers sampled 2-6 months after giving birth (2000 annually)
 - Second mailing if no response
 - Phone contact, if needed

Methods: Dependent variable (Any breastfeeding at 8 weeks)

□ Breastfeeding:

- *“Are you still breastfeeding or feeding pumped milk to your new baby?”*
- *“How many weeks or months did you breastfeed or pump milk to feed your baby?”*

□ Recoded:

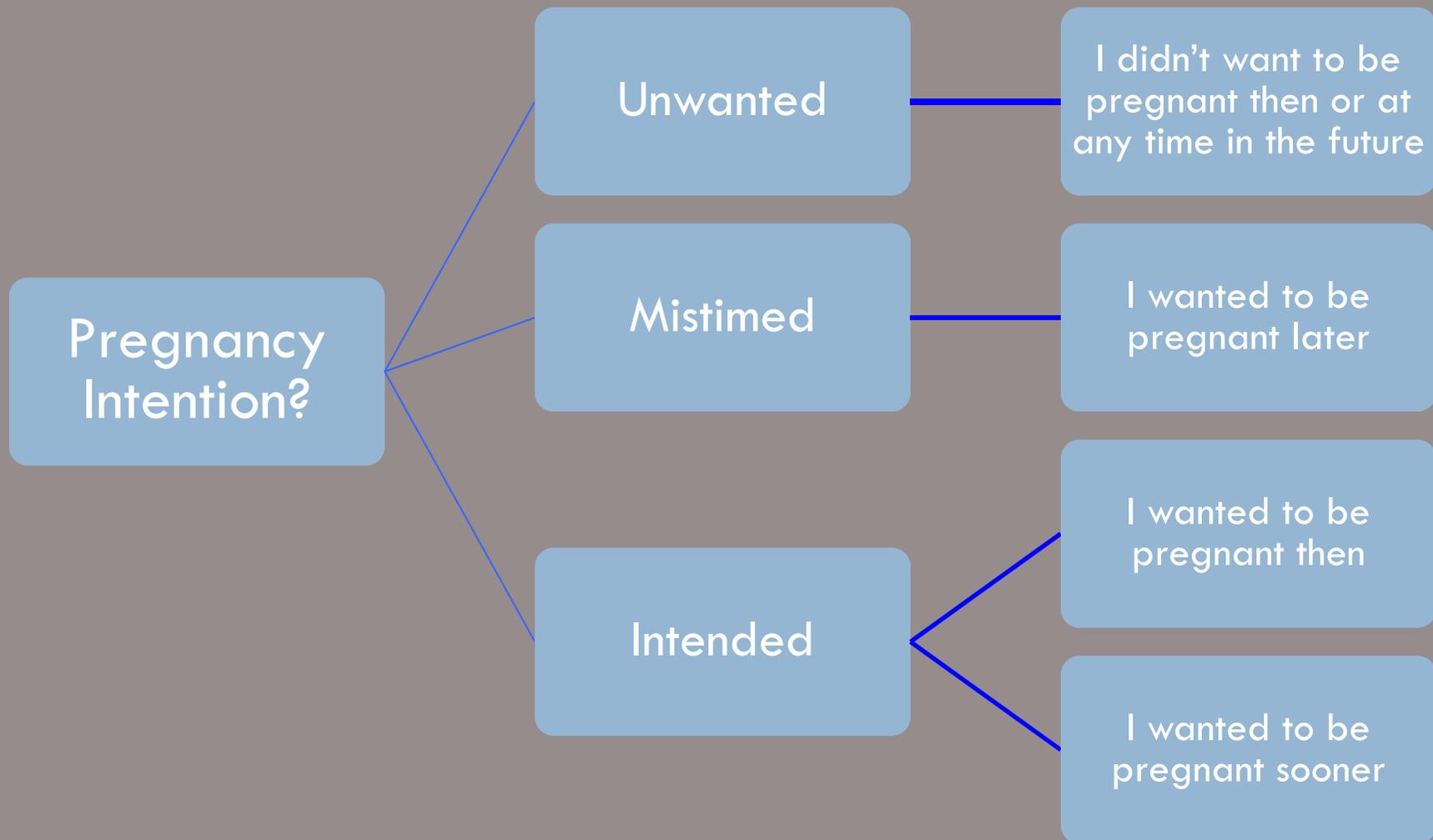
- Any breastfeeding \geq 8 weeks postpartum
 - Yes
 - No

Methods: Independent variable (Pregnancy Intention)

□ Pregnancy Intention

- “Thinking back to *just before* you got pregnant, how did you feel about becoming pregnant?
 - I wanted to be pregnant sooner
 - I wanted to be pregnant then
 - I wanted to be pregnant later
 - I didn’t want to be pregnant then or at any time in the future

Methods: Independent variable (Pregnancy Intention)



Methods: Breastfeeding Risk Factors (Independent Variables)

- Age
- Maternal education
- Alcohol & tobacco use
- Drug use in pregnancy
- Race/ethnicity
- Maternal parity
- Prenatal care
- Oral health
- Marital status
- Low infant birth weight
- Poverty level
- Domestic violence
- Rural/urban residence
- Postpartum depression
- Parity
- NICU infant admission

Methods: Statistical Analysis

- STATA statistical software
 - For complexity of PRAMS survey weights
 - Calculates weighted multiple logistic regression analysis, correcting standard errors to account for sampling and design effects
- Excluded:
 - Women who did not answer questions on pregnancy intention and/or breastfeeding

Methods: Outline of Analysis

- Identification of potential predictor and confounder variables
- Descriptive analysis: cell counts, correlations, linear associations
- Crude associations with breastfeeding at 8 weeks, cross-tabulations and simple logistic regression
- Multiple regression model building
- Model validation and Comparison

Methods: Model Building

- Variables included in initial full model:
 - Bivariate significance: $p \leq 0.25$
- Backward selection
 - Sequential removal if $p \geq 0.10$
 - Lowest significance removed first
 - Retained if removal changed OR $> 10\%$
- Interactions investigated
- Goodness of fit: *svylogitof* function
- Comparison to STATA automated backward stepwise model

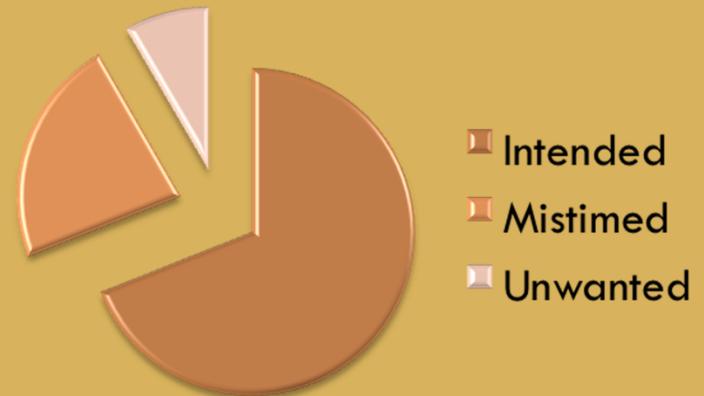
Results: Frequencies

□ PRAMS 2005 survey:

□ n = 1915, 68.2% response rate (75.6% weighted)

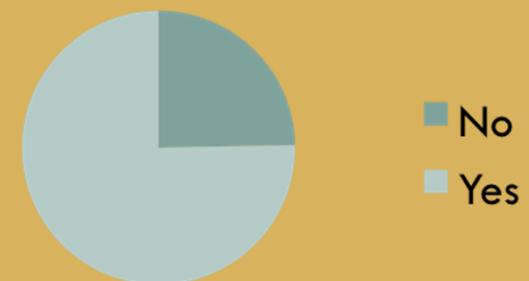
□ Pregnancy intention:

■ Intended	62.1%
■ Mistimed	30.4%
■ Unwanted	7.5%



□ Breastfeeding

■ < 8 weeks	24.7%
■ ≥ 8 weeks	75.3%



Results: Pregnancy Intention

Breastfeeding prevalence at ≥ 8 weeks by pregnancy intention:

	Proportion of population	Proportion that breastfed	Unweighted <i>n</i>
Intended	62.1%	81.4%	799
Mistimed	30.4%	67.5%	383
Unwanted	7.49%	57.6%	73
	100%		1,915

Results: Model Building

Initial full model:

- ❑ Pregnancy intention
- ❑ Age
- ❑ Education
- ❑ Marital status
- ❑ Smoking
- ❑ Postpartum depression
- ❑ Income
- ❑ Race/ethnicity
- ❑ Domestic Violence
- ❑ Dental care
- ❑ Low infant birth weight
- ❑ Parity

Final Model

- ❑ Pregnancy intention
- ❑ Age
- ❑ Education
- ❑ Marital status
- ❑ Smoking
- ❑ Postpartum depression

Results: Multivariate Model

- Final model: 6 predictor variables
- No significant interaction terms
- No evidence of confounding
- Good model fit
 - *svylogitof* F-adjusted test statistic 0.819, $p = 0.598$
- Comparable to STATA model from automated backward selection

Results: Breastfeeding & Pregnancy Intention

Multivariate analysis

	OR	95% C.I.	P - value
Mistimed compared to unwanted	1.99	1.00, 3.96	0.049
Intended compared to unwanted	2.45	1.27, 4.72	0.008
Intended compared to mistimed	1.23	0.81, 1.86	0.334

Results: Additional Covariates

- Significantly associated with breastfeeding ≥ 8 weeks:

Variable	OR (95% C.I.)*
Non-smoking	1.99 (1.19, 3.34)
Marital status	1.72 (1.15, 2.58)
Absence of postpartum depression	1.85 (1.10, 3.12)
Age	
<20	referent
20-24	2.25 (1.20, 4.19)
25-34	3.45 (1.87, 6.38)
≥ 35	2.83 (1.27, 6.32)

Discussion: Concordance with Literature

- Dye et al. (1997)
 - *Mistimed vs. intended*
 - Breastfeeding intention only
 - East coast population
- Taylor and Cabral (2002)
 - *Mistimed vs. intended*
 - First births only, no tobacco adjustment
 - Alternate pregnancy intention variable formation
- D'Angelo et al. (2004)
 - *Mistimed vs. unwanted* (OR 1.38, 1.30-1.46)
 - Breastfeeding initiation, univariate analysis only

Discussion

- Mistimed pregnancies are statistically more likely to be breastfed at 8 or more weeks than unwanted pregnancies
- Pregnancy intention overall is significantly associated with any breastfeeding ≥ 8 weeks
- By classifying pregnancies as *intended/mistimed/unwanted*, resources may be targeted at the most potentially risky: the 7.49% that are unwanted

Discussion

- Despite increasing national trends, effect of pregnancy intention on breastfeeding still relevant
- Increasing percentage of unwanted pregnancies among U.S. women
 - Largely occurred among poor, less educated women
 - Yet Oregon unwanted childbirths decreasing

Discussion: Pregnancy Intention Definition

- Continually evolving variable
- NSFG quantifies mistiming of pregnancy
 - < 2 years too soon
 - ≥ 2 years too soon
- 'Wantededness' vs. Intendedness
 - Unintended pregnancy \neq unwanted child?

Discussion: Other Factors

- Breastfeeding $\geq 8w$ was significantly associated with:
 - Age
 - Non-smoking
 - Lack of postpartum depression
 - Marital status
- Implies that efforts to increase breastfeeding duration should be focused on young, unmarried, smoking women and those who endorse postpartum depression.

Discussion: Study Strengths

- PRAMS as validated, cross-sectional study with wide breadth of known and possible covariates
 - Many previous studies lacking key covariates
 - Current data
- Use of 3-level pregnancy intention variable
 - Directly compared *mistimed* vs. *unwanted pregnancy intention*
- Oregon-specific data
 - More generalizable to Western states

Discussion: Limitations

- Cross-sectional study
 - Only measures association, not *risk*
- Recall bias and temporality
- Self-reported information
- Modest response rate
- Outcome definition:
 - breastfeeding ≥ 8 weeks analyzed, vs. AAP recommendations of ≥ 6 months
 - 'Any' vs. 'Exclusive' breastfeeding
- Survey non-response
- STATA survey function
 - Not all types of analysis available

Discussion: Limitations continued

- Alcohol
- Similar variables:
 - Education, Income, Age
- Immediately postpartum variables:
 - Proxies for breastfeeding or reverse causation?
- Other potential predictor variables or confounders
 - Medical conditions preventing breastfeeding
 - Illicit substance abuse

Conclusion

- Breastfeeding services should be targeted to the group at greatest potential risk: **unwanted pregnancies**
- Three-level pregnancy intention variable should be used for future research gathering and policy implications
- Education of public health and pediatric researchers is needed on the meaning and implications of the term, *mistimed pregnancy*

Future Research

- Study longer durations of breastfeeding
- Better define pregnancy intention
 - Pregnancy *wantedness*
 - Improving variable reliability, predictability
 - Timing of *mistimed*
- Does decreasing incidence of unwanted pregnancies within a community correlate with increase in breastfeeding?
- How to effectively address women with mistimed pregnancies?
- Among mistimed pregnancies, does contraceptive access, use, or failure play a significant role in defining pregnancy intention?

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