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Have we left some behind?

Monitoring trends in health inequalities

A PATHS Equity for Children Project

Nathan C. Nickel

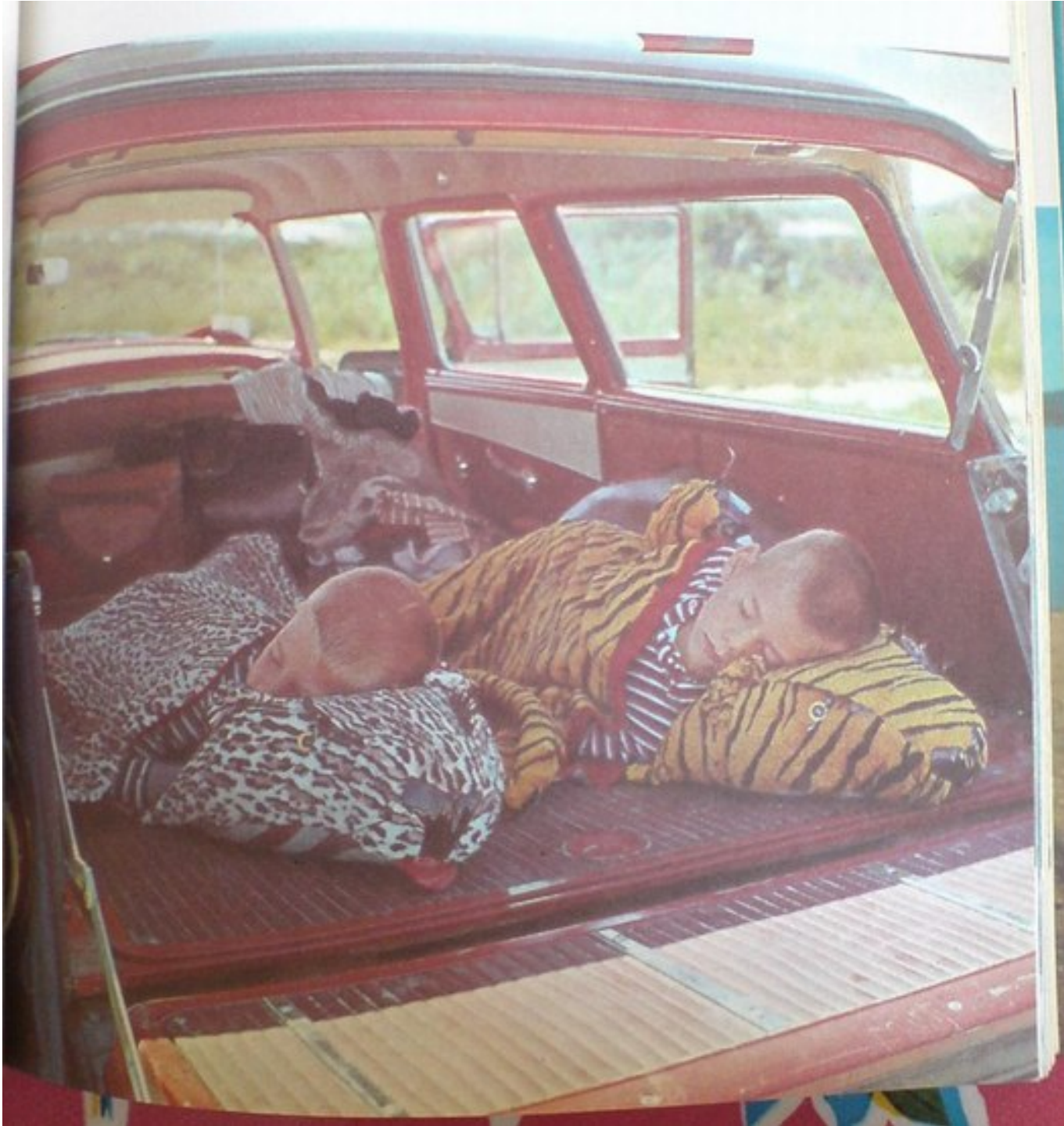
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Manitoba Centre
for Health Policy



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Ford Treasury of Station Wagon Living Volume 2. Franklin M. 1958

Check Under the Blankets

- 62nd World Health Assembly set health equity priorities
 - Develop and apply health equity measures
 - Monitor trends in health inequities
- PATHS Equity for Children
 - Program of research—several studies
 - Evaluate policy impact on health equities
 - Present methodological approach / health equity measures
 - Illustrate using results from sub-project

Research Question

- Do socioeconomic inequalities exist with respect to breastfeeding?
- Have inequalities changed over time?

Methods

- Data: Population Health Research Data Repository
 - Population-based: nearly all Manitobans
 - Hospital Discharge Abstracts
 - Canadian Census data
- Analytic Cohort: Mother-Infant Dyads
 - Live births
 - Gestational age ≥ 37 weeks
 - April 1, 1988 through March 31, 2011

Methods

- Measures
 - Breastfeeding Initiation (dichotomous)
Hospital discharge abstract
 - Area-level Socioeconomic Status
 - Postal Code Conversion File
 - Average income for dyad's census dissemination area
 - Sorted into income quintiles: Q1 (lowest) – Q5 (highest)

Methods

- Breastfeeding Rates
 - Generalized Linear Models
 - Poisson distribution
 - Population offset
 - 3-year rates
 - Crude and adjusted for maternal age at first birth
 - Present hospital rates as case study
 - Overall Rates
 - Rates by Income Quintile

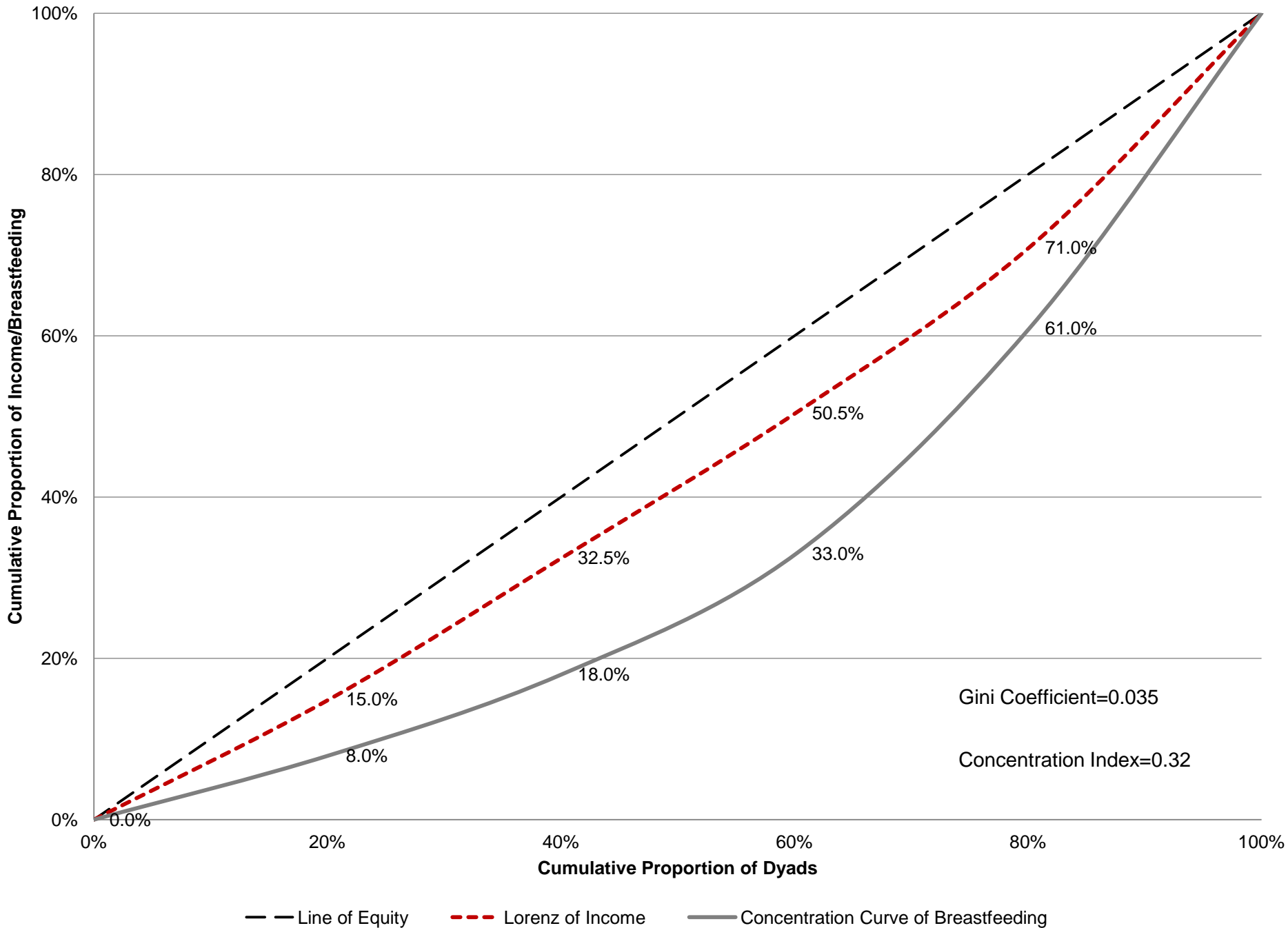
Methods

- Measures of Inequality
 - Rate Ratios
 - (Rate in Lowest Quintile to Rate in Highest Quintile)
 - Rate Difference
 - (Rate in Lowest Quintile to Rate in Highest Quintile)
 - Pairwise comparisons

Methods

- Want to study inequalities across entire socioeconomic gradient
- Three Equality measures:
 1. Lorenz Curve and Gini Coefficient
 2. Concentration Curve and Concentration Index

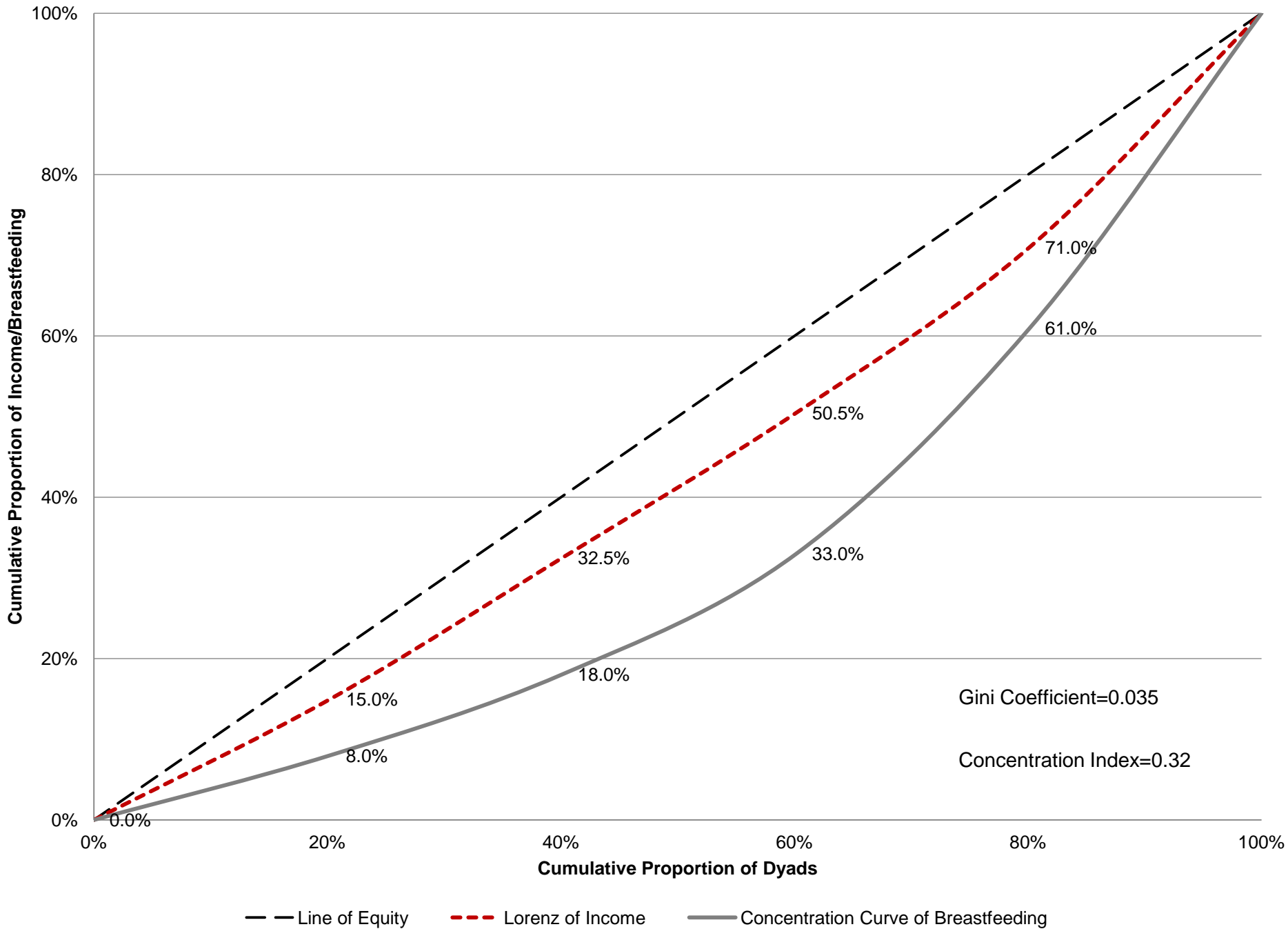
Example Lorenz Curve and Concentration Curve



Methods

- Want to study inequalities across entire socioeconomic gradient
- Three Equality measures:
 1. Lorenz Curve and Gini Coefficient
 2. Concentration Curve and Concentration Index
 3. Kakwani Progressivity Index
 1. Difference between Gini Coefficient and Concentration Index

Example Lorenz Curve and Concentration Curve



Methods

Area of Gini $>$ Area of Concentration Index

Health Inequalities are **LESS THAN EXPECTED**

Area of Gini $<$ Area of Concentration Index

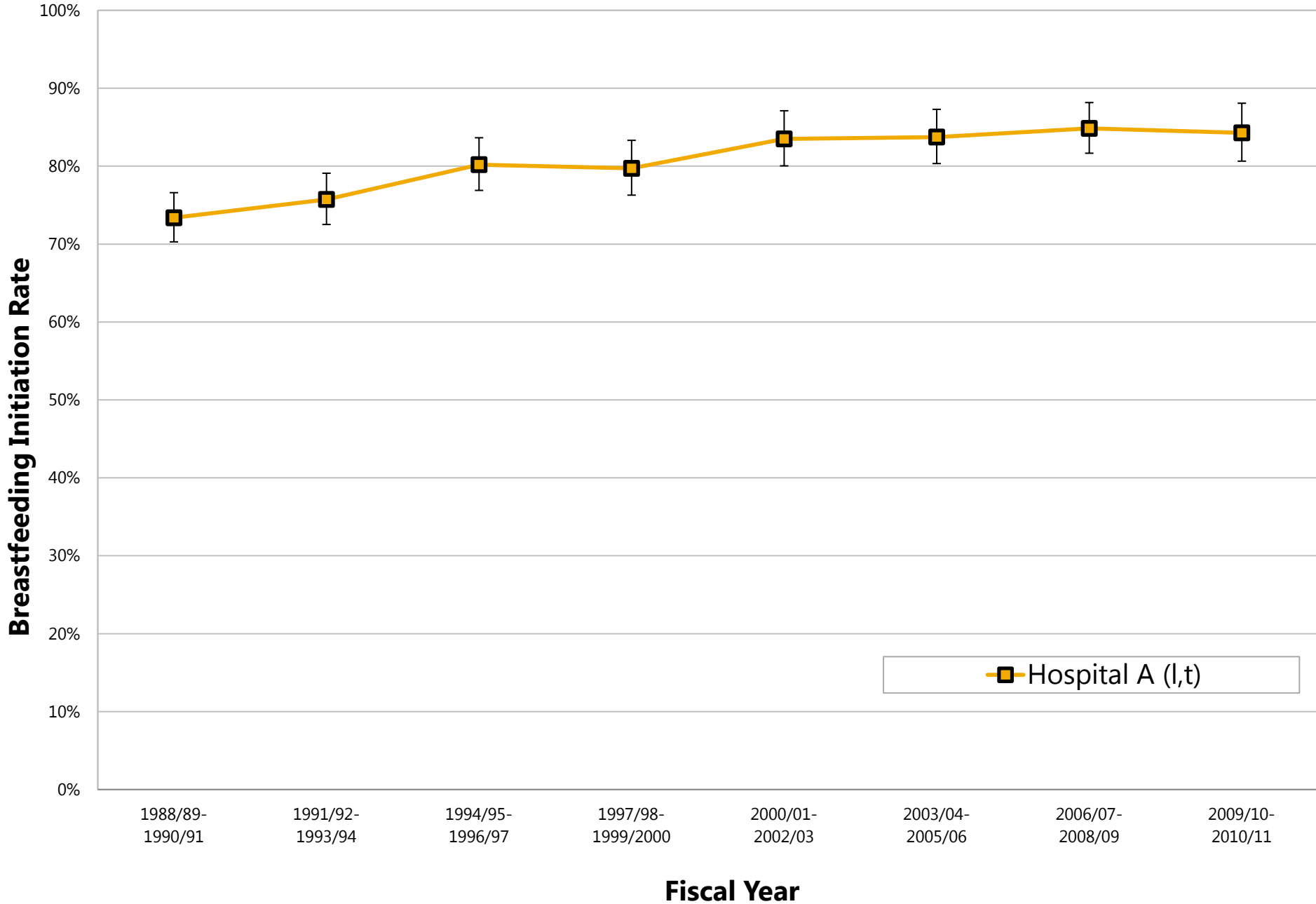
Health Inequalities are **GREATER THAN EXPECTED**

Methods

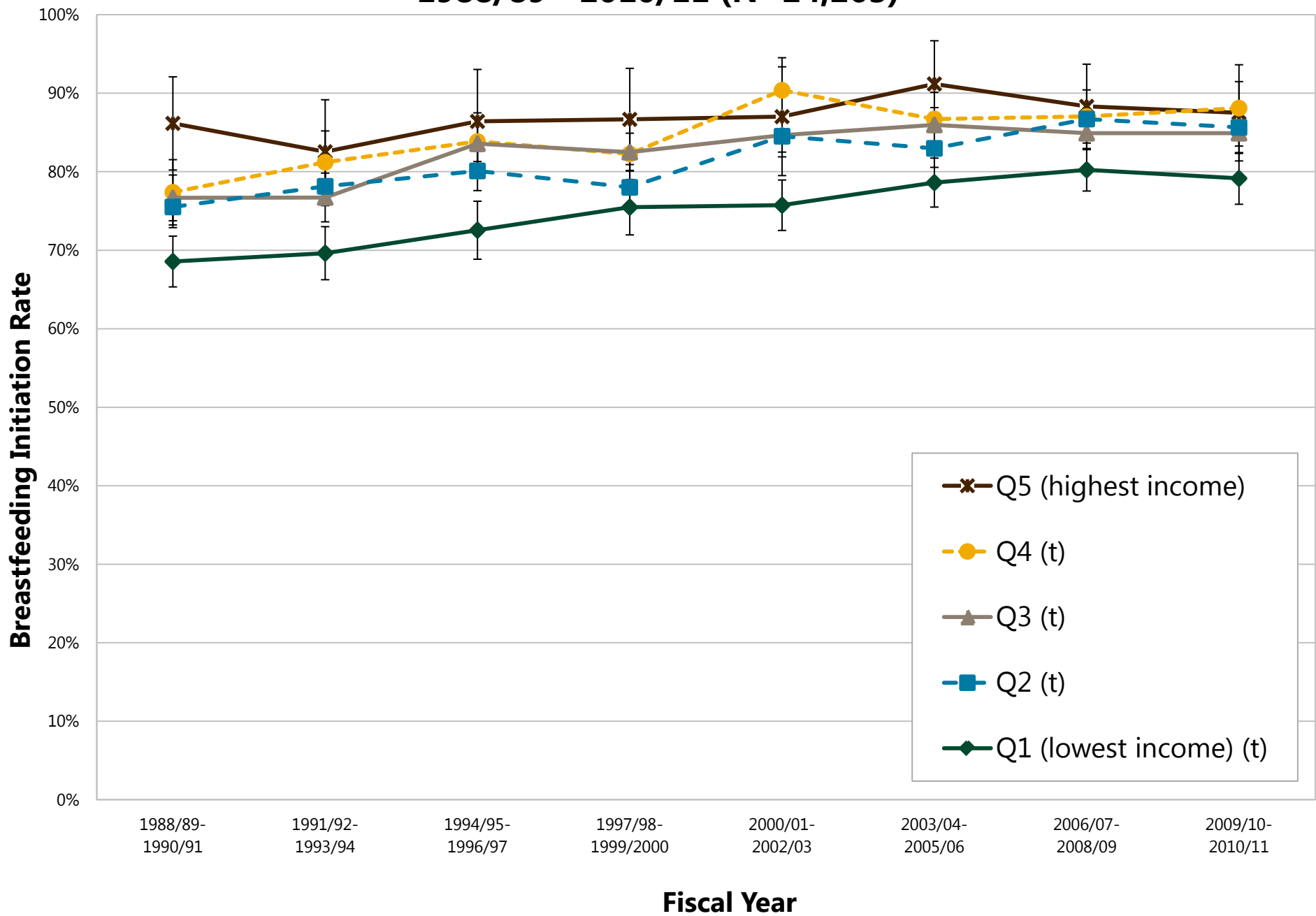
Analyses

- Test change, first to last time period
- Linear trend test for time
- Measures of Precision
 - Statistical Significance from models (Rate Ratios and Rate Differences)
 - Boot strapped Gini Coefficient, Concentration Index, Kakwani Index

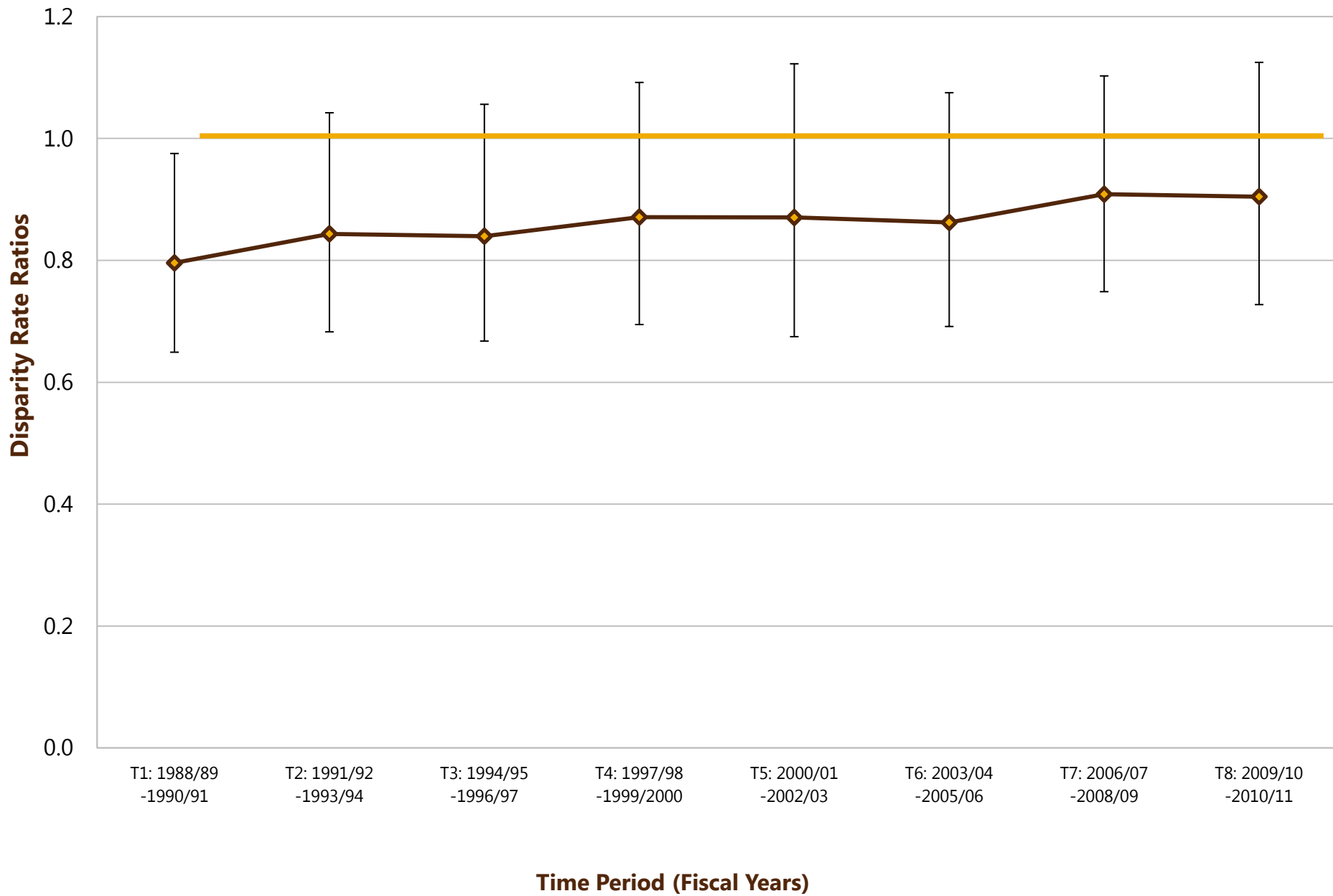
Adjusted Breastfeeding Initiation Rate in Hospital A, 1988/89 - 2010/11 (N = 24,263)



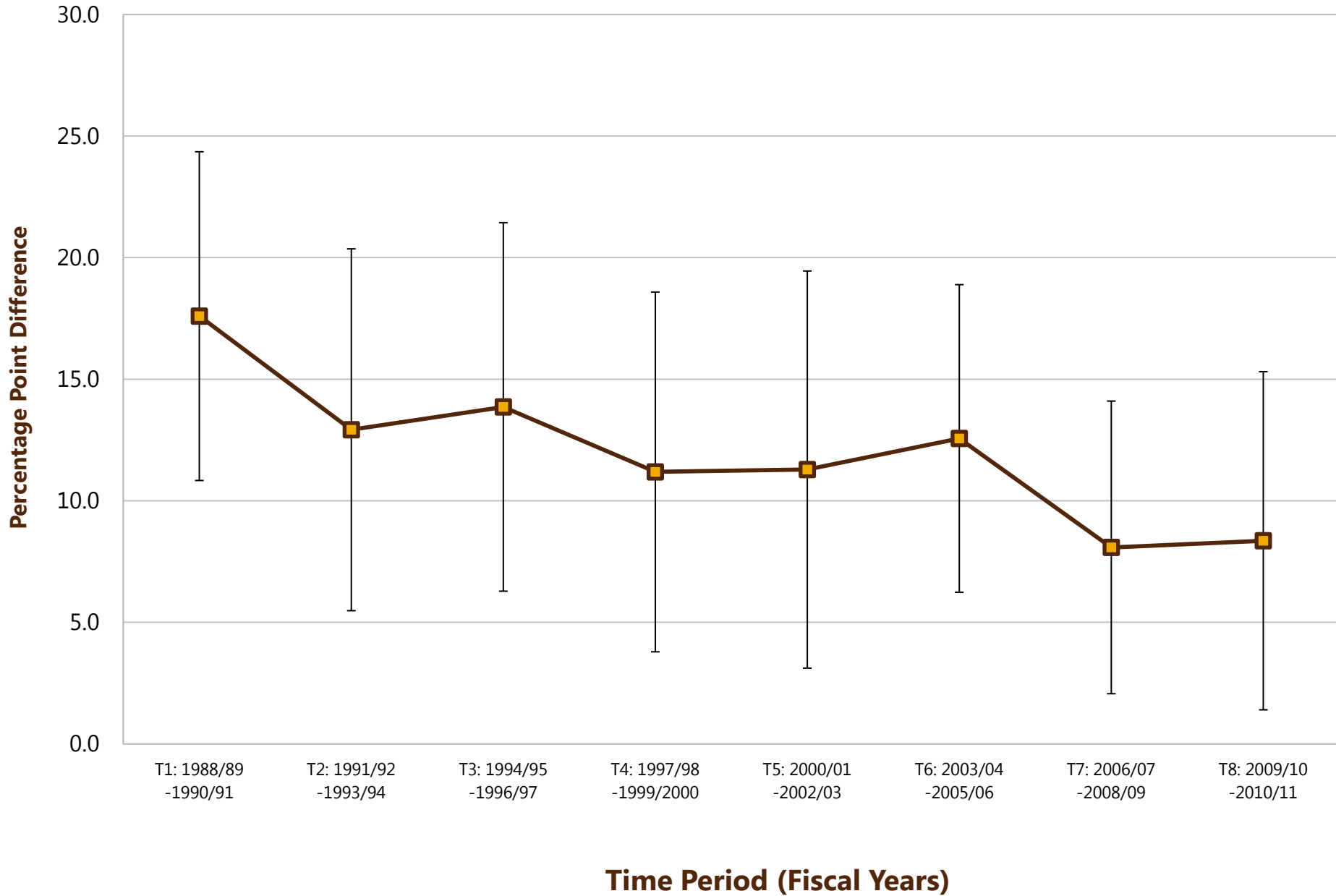
Breastfeeding Initiation Rate by Income Quintile in Hospital A, 1988/89 - 2010/11 (N=24,263)



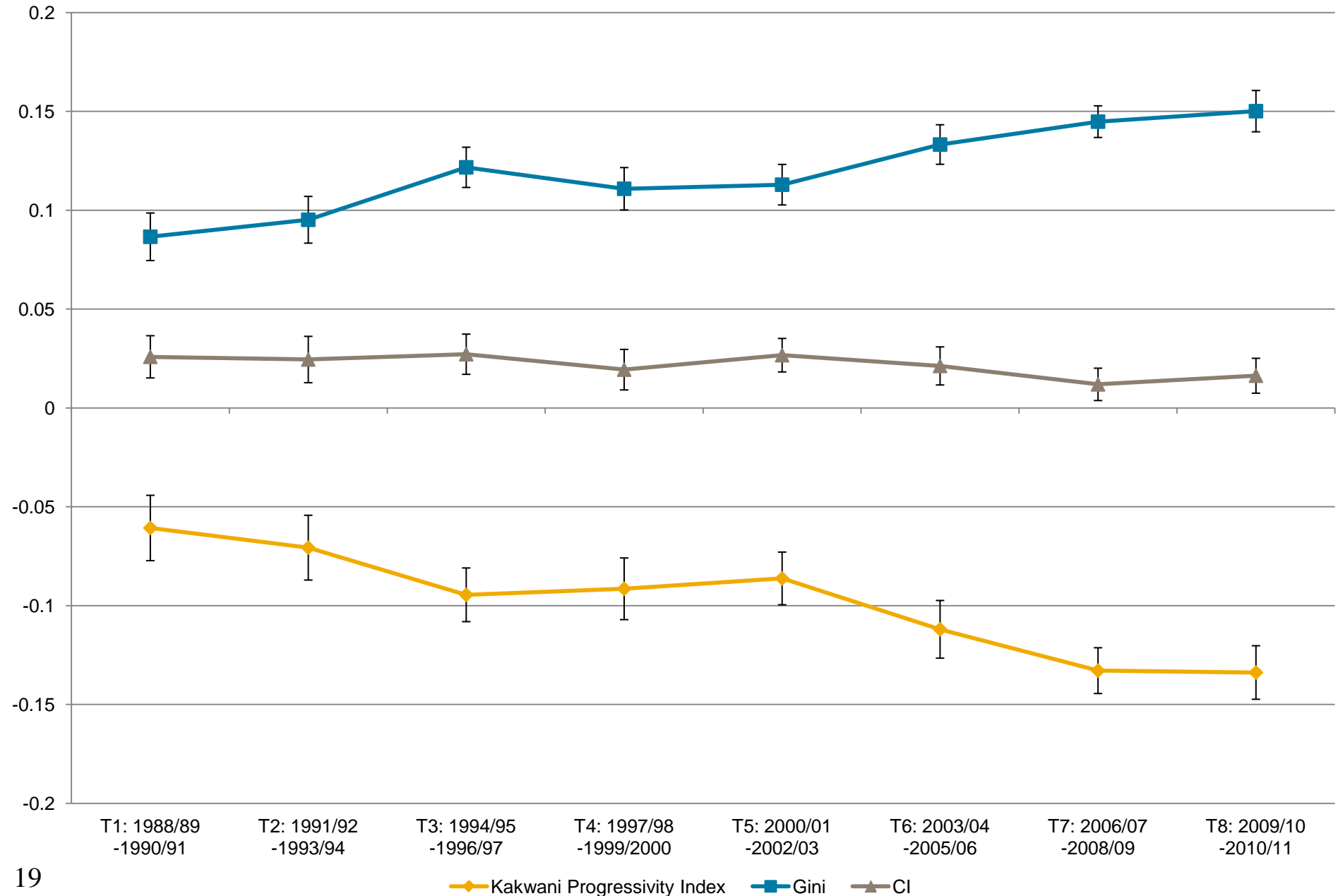
Breastfeeding Initiation Rate Ratio (Q1/Q5) Hospital A, 1988/89 - 2010/11



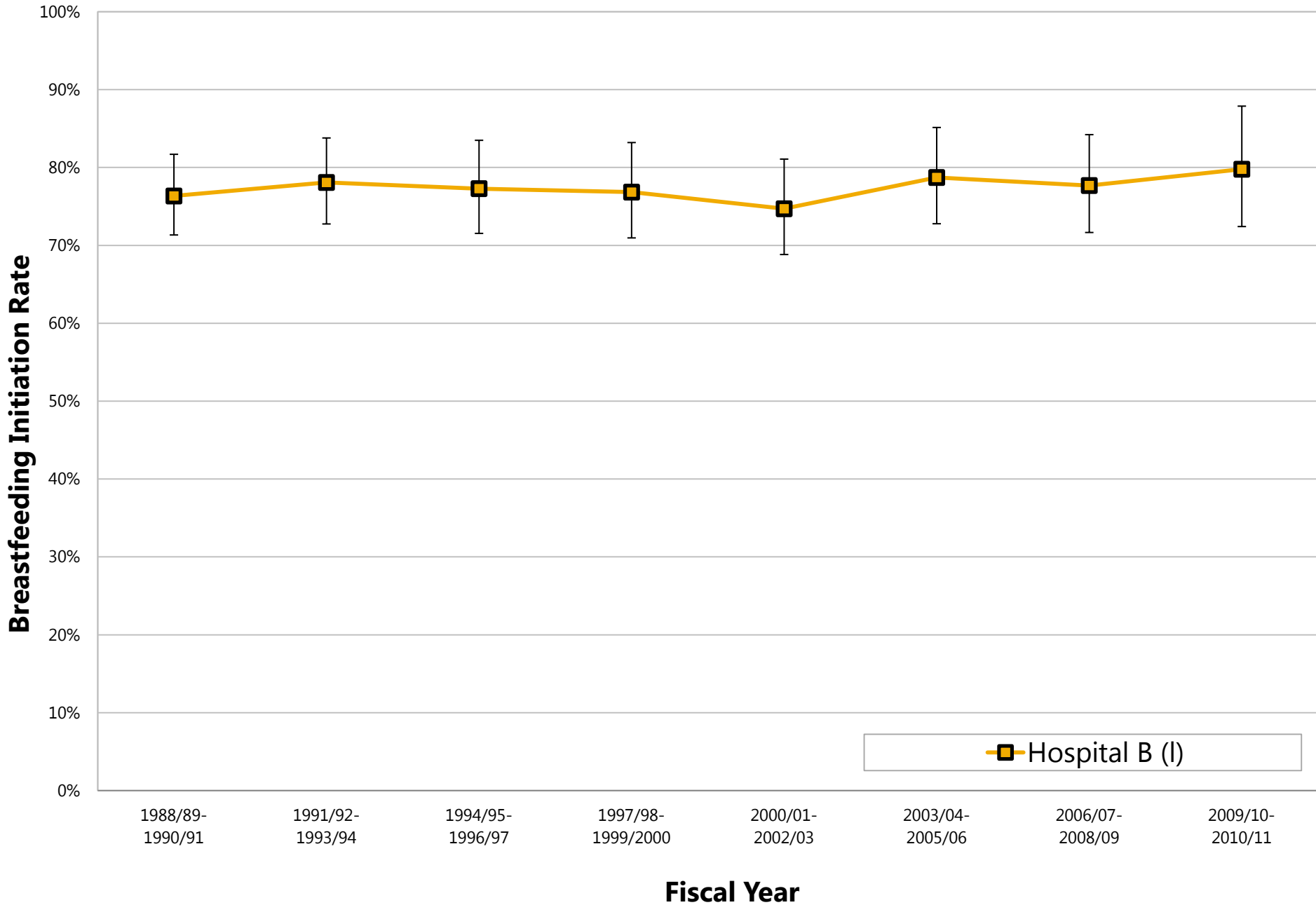
Breastfeeding Initiation Rate Differences Hospital A, 1988/89 - 2010/11



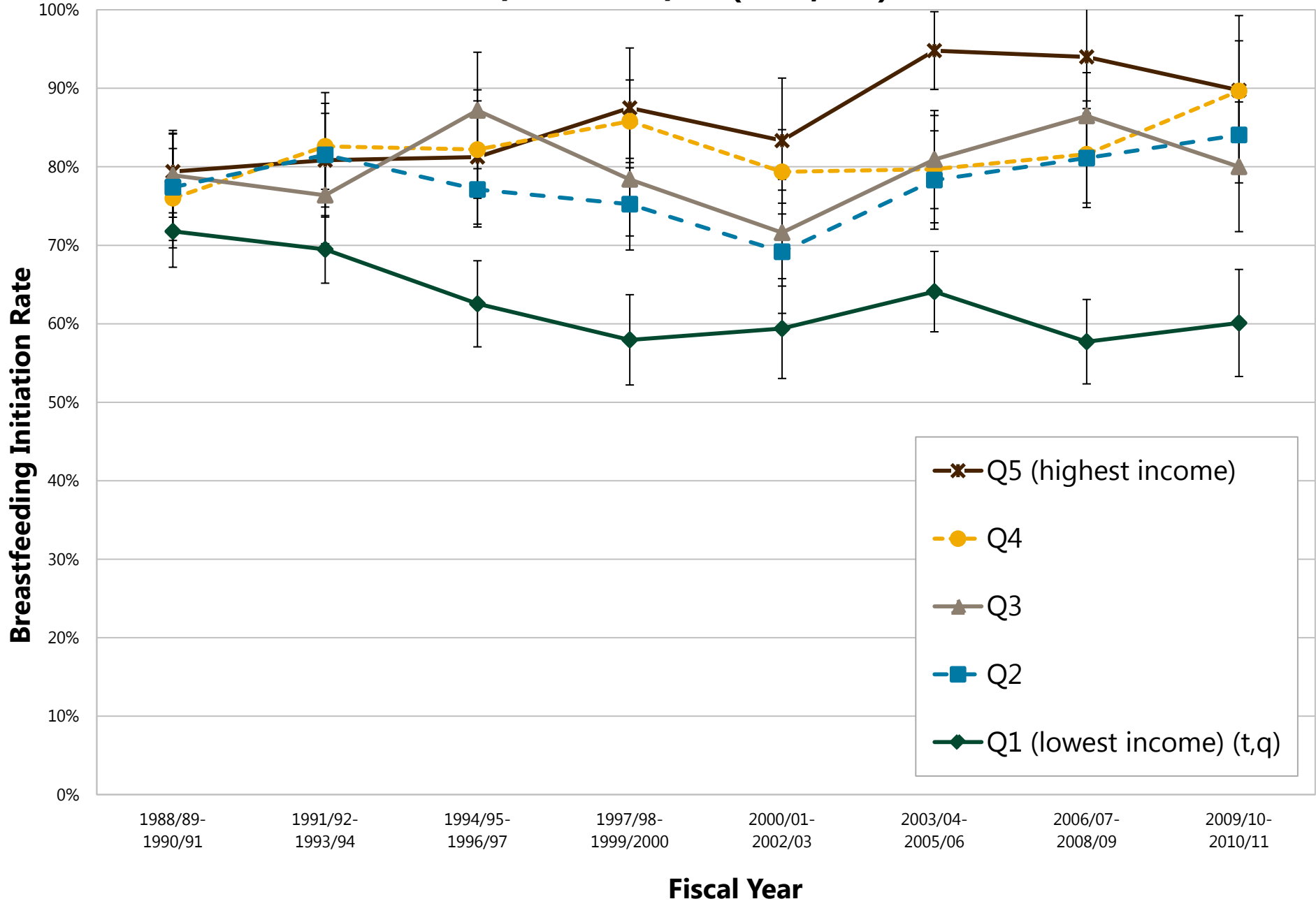
Kakwani Progressivity Index for Breastfeeding Hospital A, 1988-2011



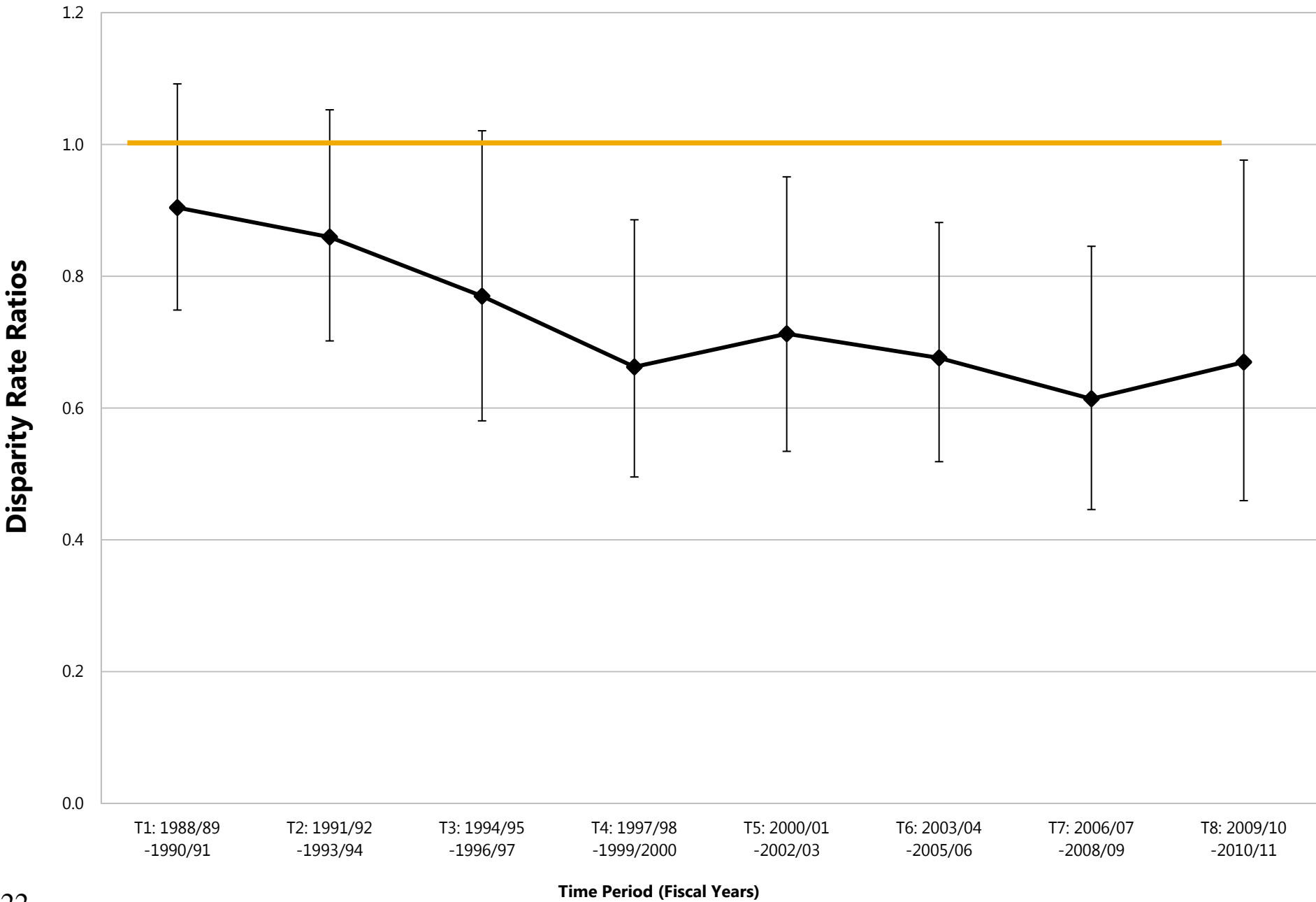
Adjusted Breastfeeding Initiation Rate in Hospital B, 1988/89 - 2010/11 (N=7,055)



Breastfeeding Initiation Rate by Income Quintile in Hospital B, 1988/89 - 2010/11 (N=7,055)

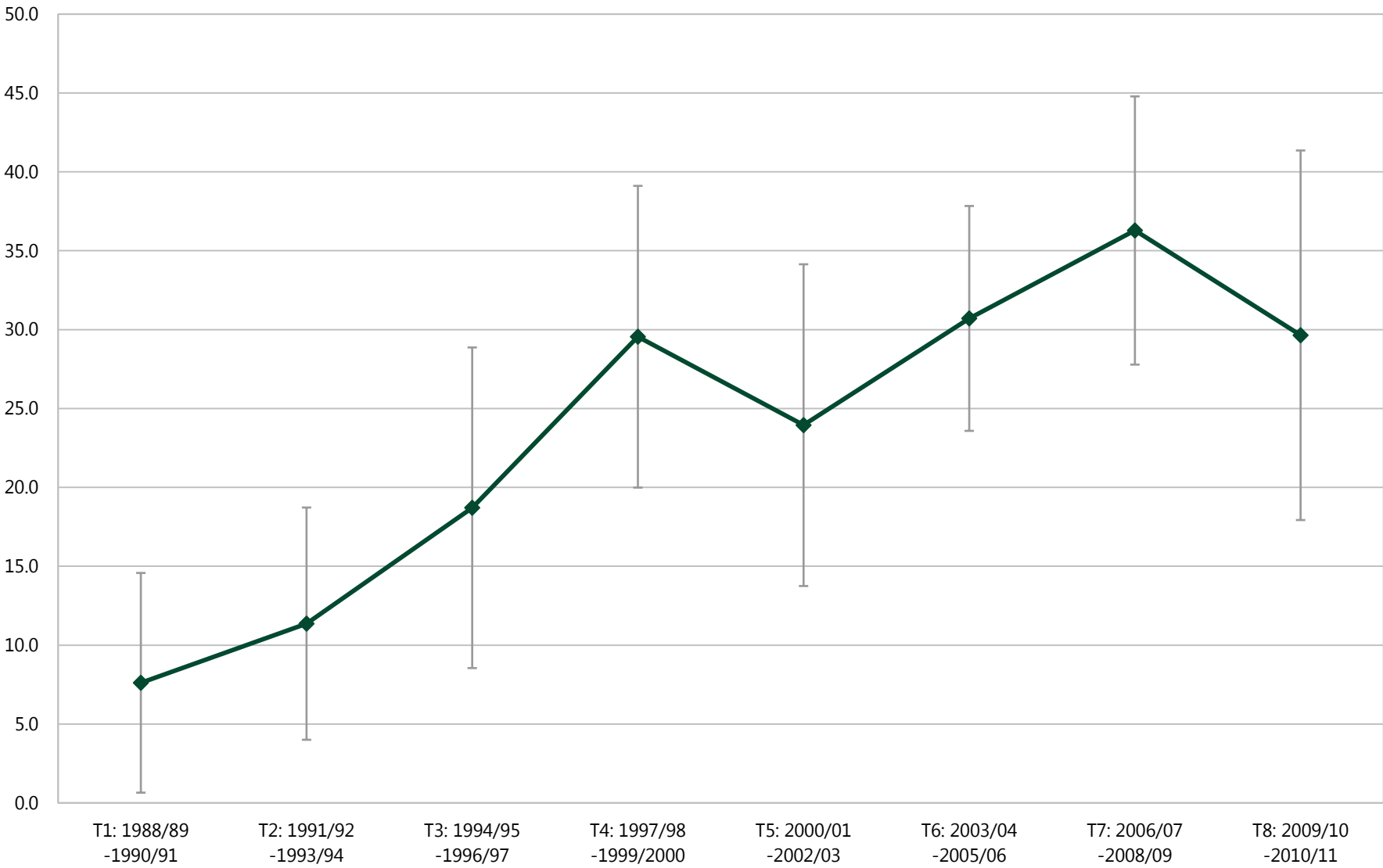


Breastfeeding Initiation Rate Ratio (Q1:Q5) Hospital B, 1988/89 - 2010/11



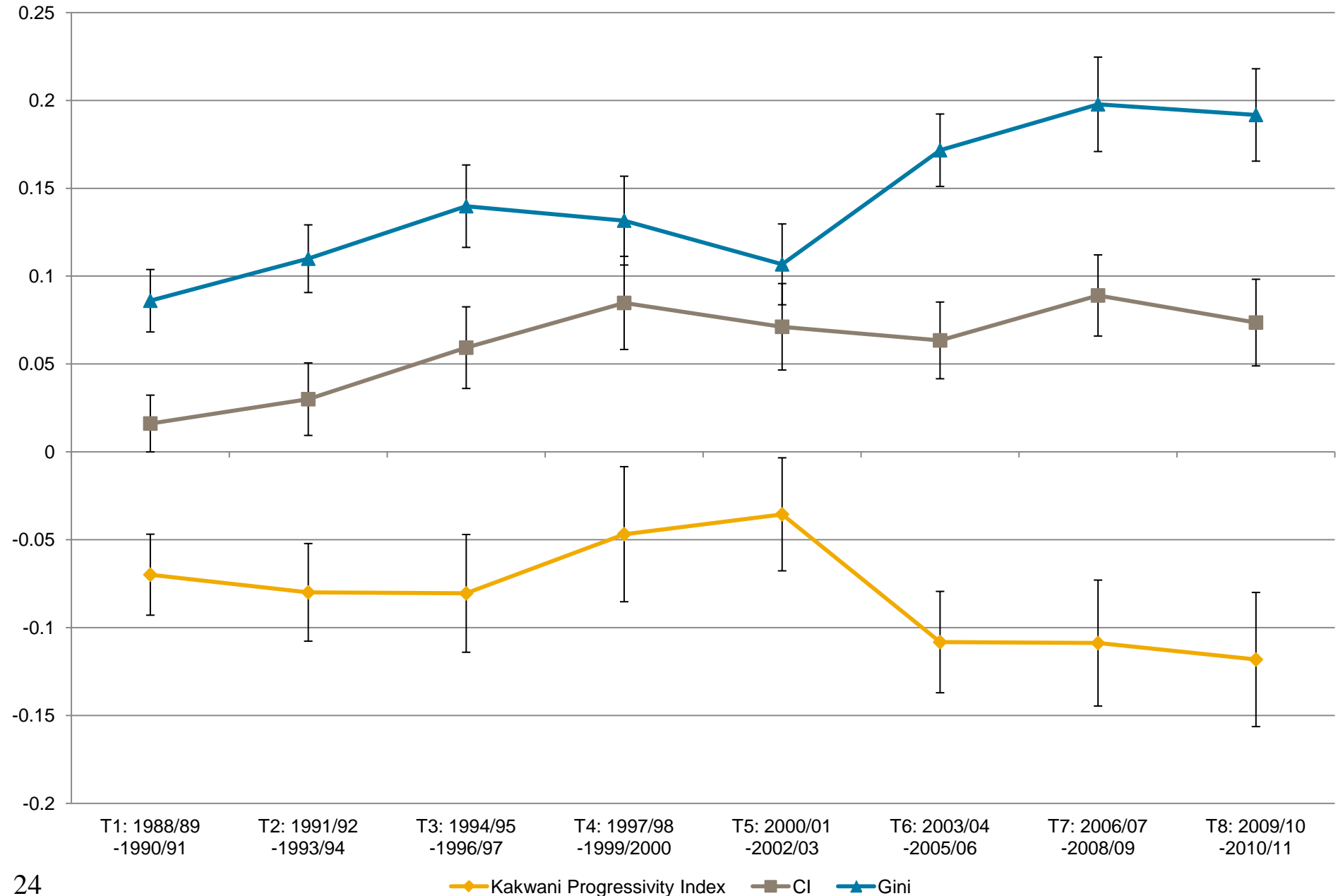
Breastfeeding Initiation Disparity Rate Differences Hospital B, 1988/89 - 2010/11

Disparity Rate Differences



Time Period (Fiscal Years)

Kakwani Progressivity Index for Breastfeeding Hospital B, 1988-2011



Discussion and Implications

- Trends in overall rates do not capture changes in inequality
 - At surface no change
 - Health inequality may be worsening
- Health Equality: Distribution across entire population
 - Rate Ratios and Rate Differences—Pairwise comparisons
 - Concentration Index—Health across entire population

Discussion and Implications

- Digging Deeper
 - Do changes in health inequality reflect changes in socioeconomic inequalities?
 - Kakwani Progressivity Index quantifies whether health inequalities are worse or better than expected

Discussion and Implications

- Graphical communication of health inequalities facilitates knowledge translation
- Policy makers / Research users engaging with results
- Identify areas to target for intervention.

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Thank You / Questions

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INNOVATOR CHALLENGER REBEL VISIONARY

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