

Characteristics and Determinants of Infant Catch-Up Growth Trajectories

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Introduction

Background

- ❖ Catch-up growth is rapid growth after a period of reduced growth.
- ❖ Infant catch-up growth is a strong risk factor for childhood obesity.
- ❖ Characteristics and predictors of infant catch-up growth trajectories remain underexplored.

Objectives

- ❖ To characterize infant growth trajectories.
- ❖ To examine the associations of maternal smoking cessation and other determinants with infant growth trajectories.

Methods

Sample size: 25 mother-infant pairs from UB Smoking Cessation Study

Birth	1-12 months
Determinants: <ul style="list-style-type: none"> • Size-for-gestational age • Pre-pregnancy BMI • Maternal Education • Smoking Cessation 	Infant growth measures: <ul style="list-style-type: none"> • Weight • Length • Body mass index (BMI)



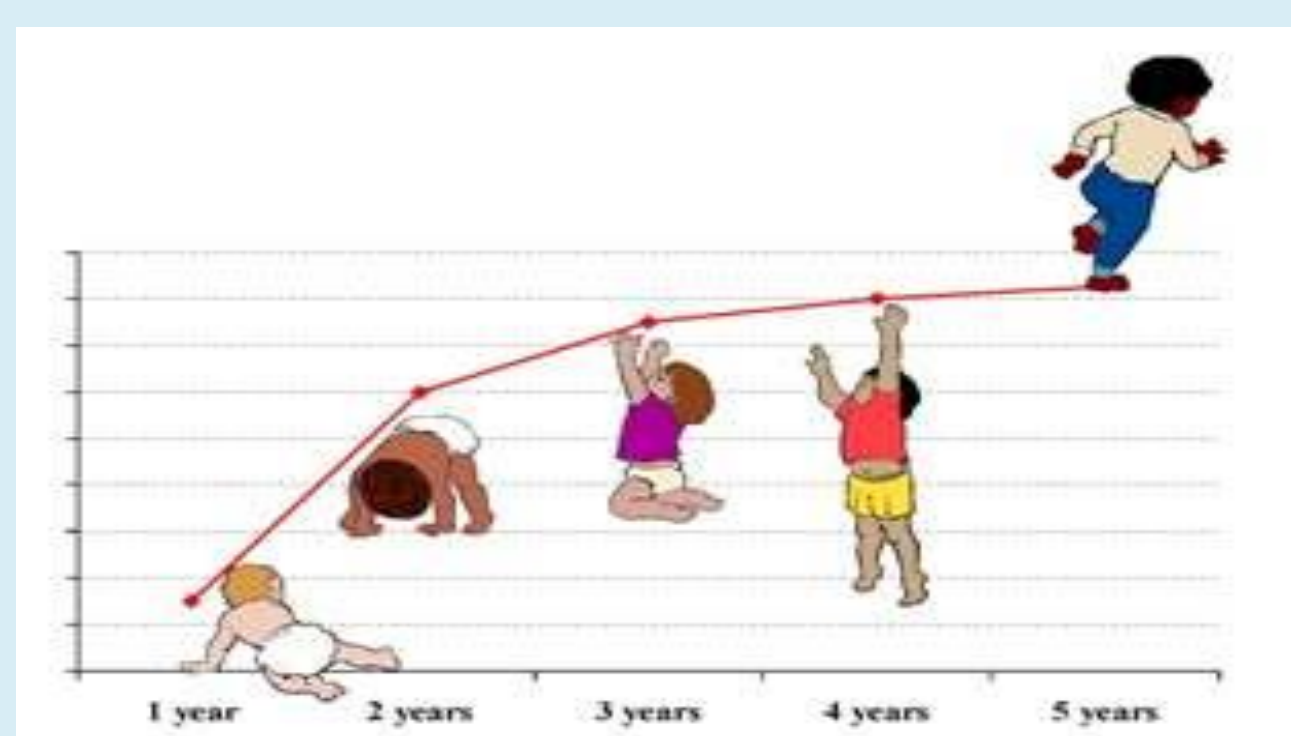
Data obtained at monthly visits via surveys and growth measures

Infant anthropometric measurements:

- ❖ Weight, length, BMI → SECA Weight and Length Scales
- ❖ BMI-for-age Z-scores → World Health Organization Growth Standard

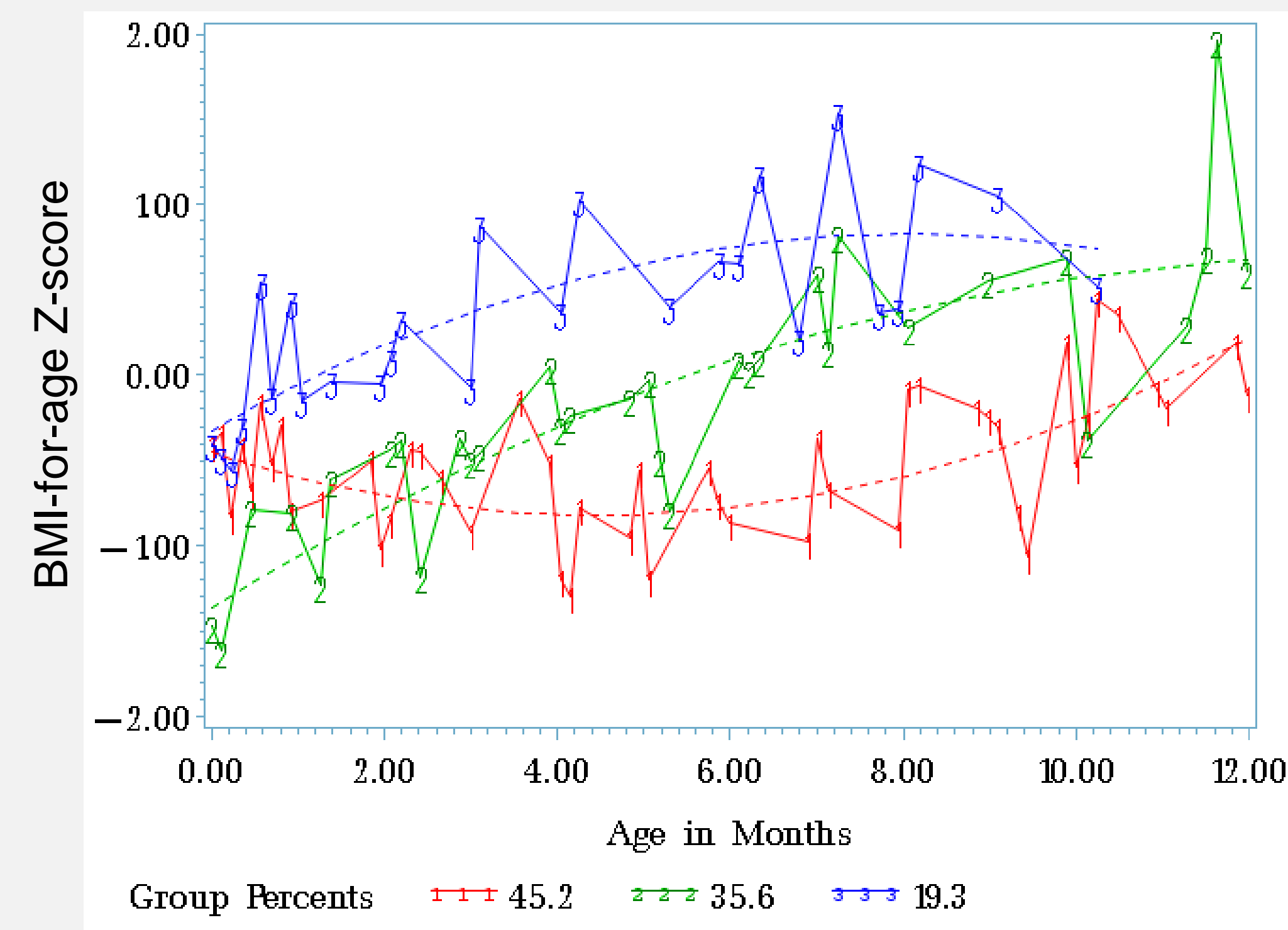
Data Analysis:

- ❖ Latent growth trajectory modeling (SAS Proc Traj) to classify infant group trajectories of BMI Z-scores.
- ❖ Chi-square and *t*-test to examine potential predictors of infant growth trajectories.



Results

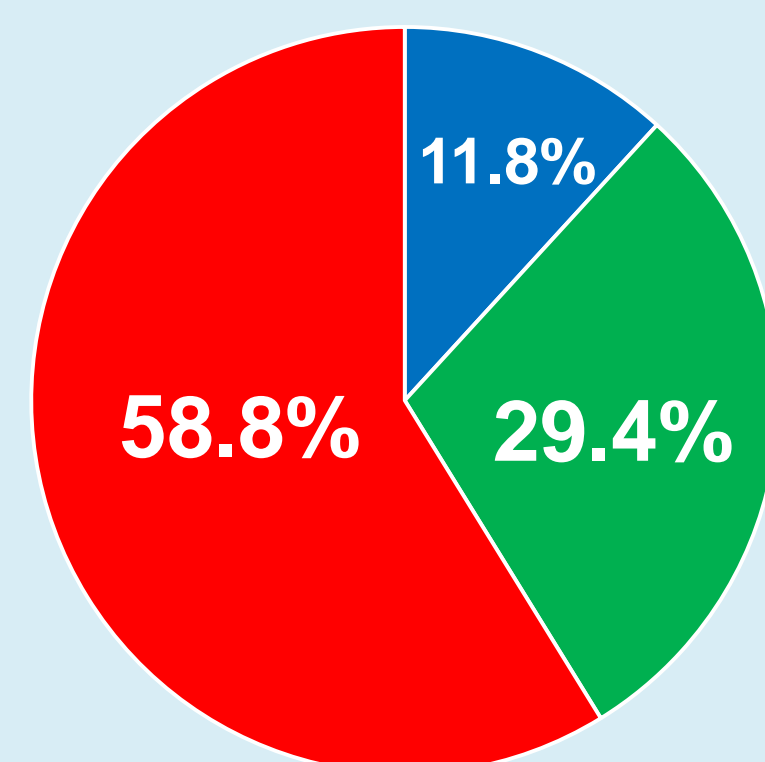
Infant BMI-for-age Z-score Trajectories



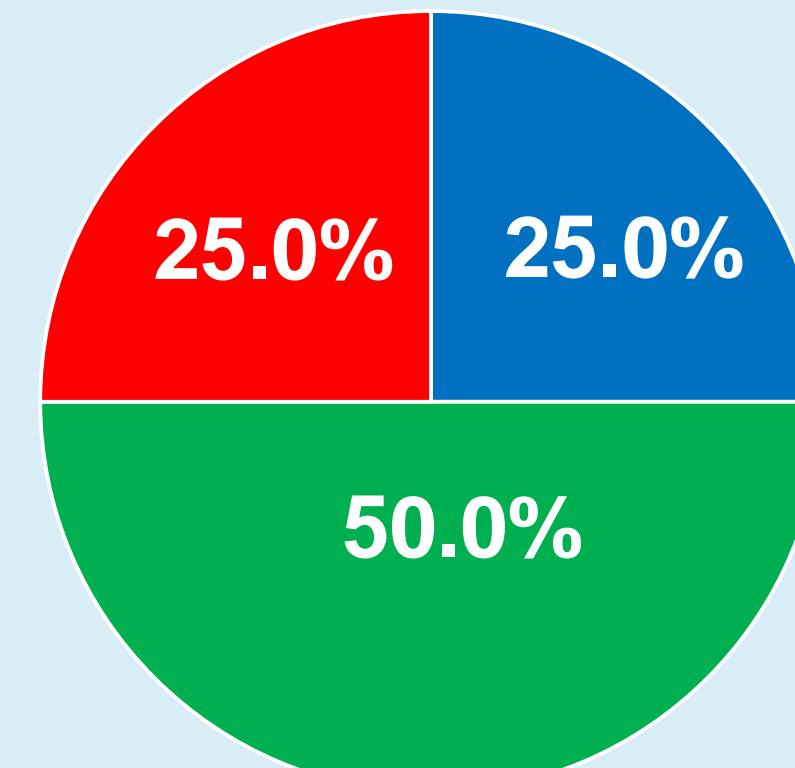
We identified 3 patterns of infant growth trajectories of BMI Z-score:

- Accelerated Growth
- Early Onset Catch-Up Growth
- Late Onset Catch-Up Growth

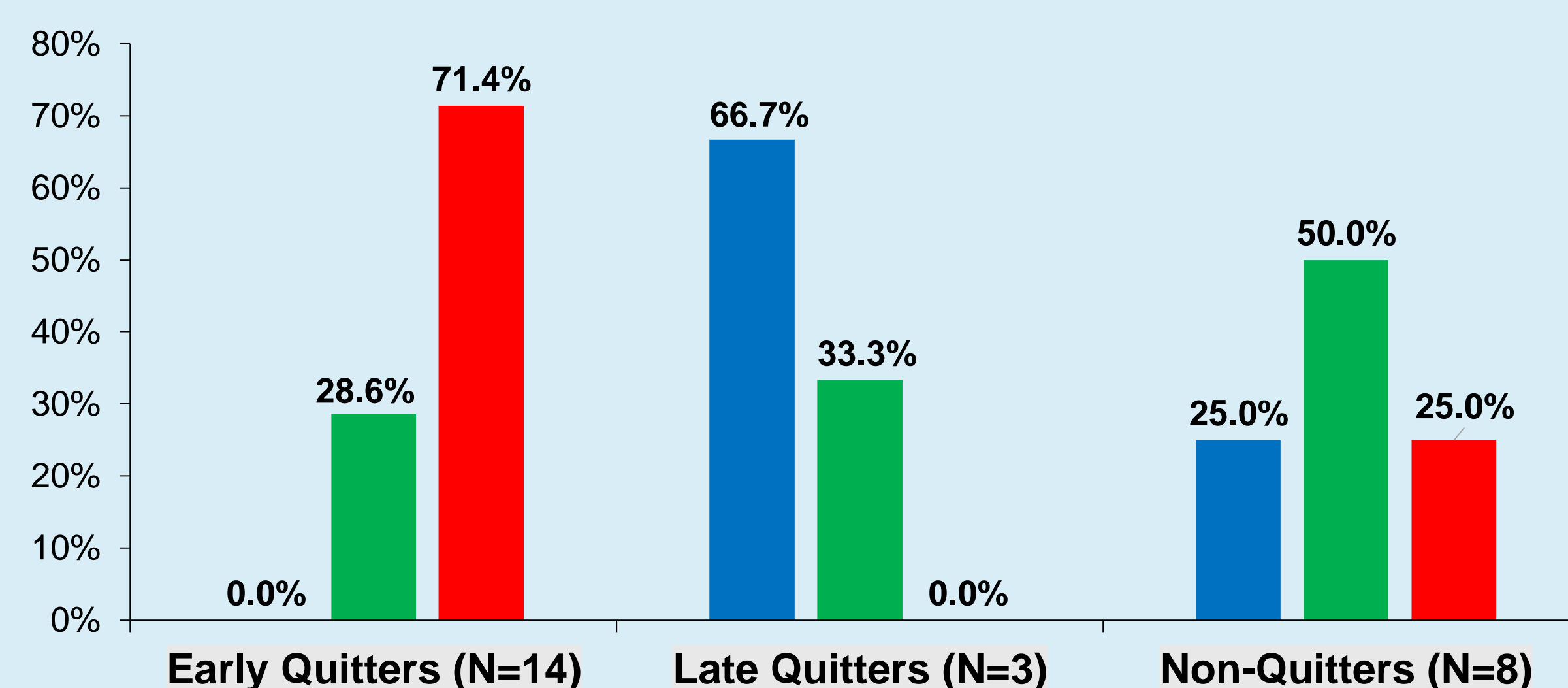
Quitters (N=17)



Non-Quitters (N=8)



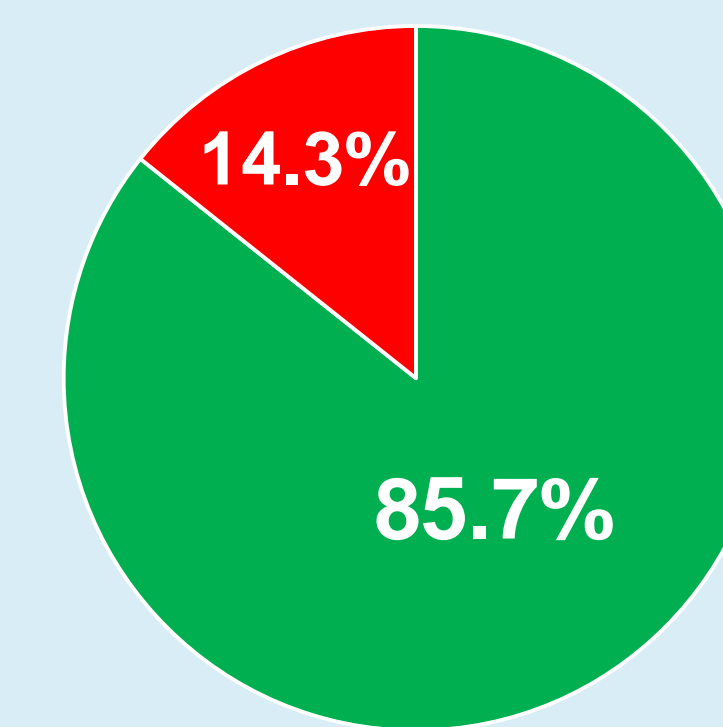
• There was no significant association between smoking cessation during pregnancy and infant growth trajectories of BMI Z-score ($p=0.317$).



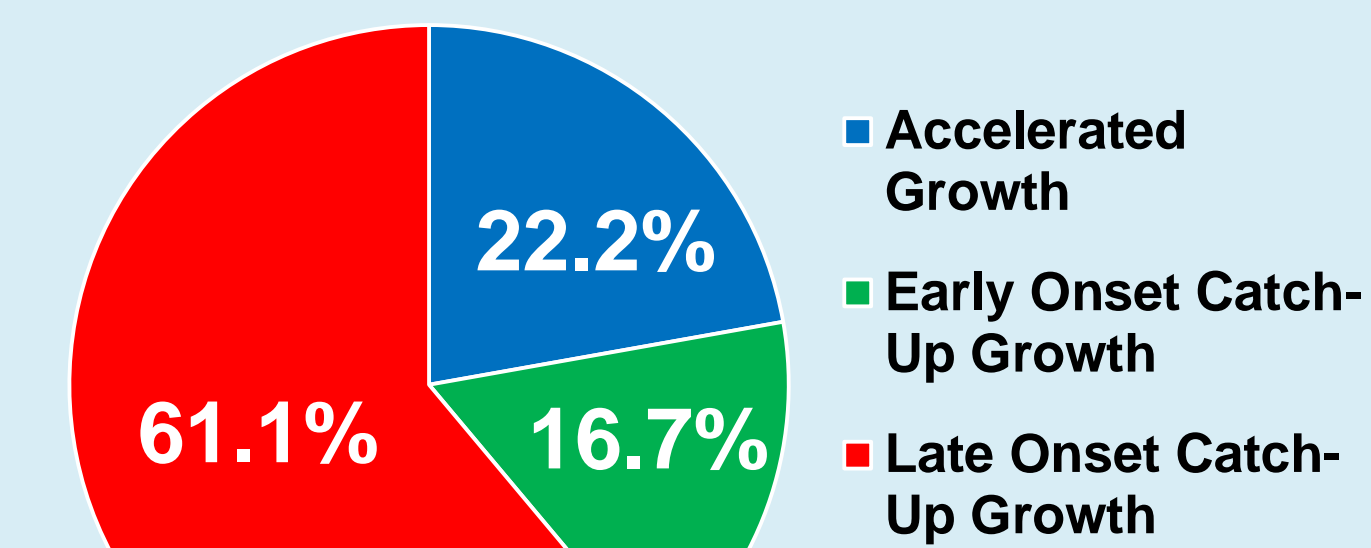
• Infants of early quitters during pregnancy (≤ 27 weeks) tended to have late onset catch-up growth, while infants of late quitters (≥ 28 weeks) tended to have accelerated growth ($p=0.009$).

Results (cont.)

Small for Gestational Age (N=7)

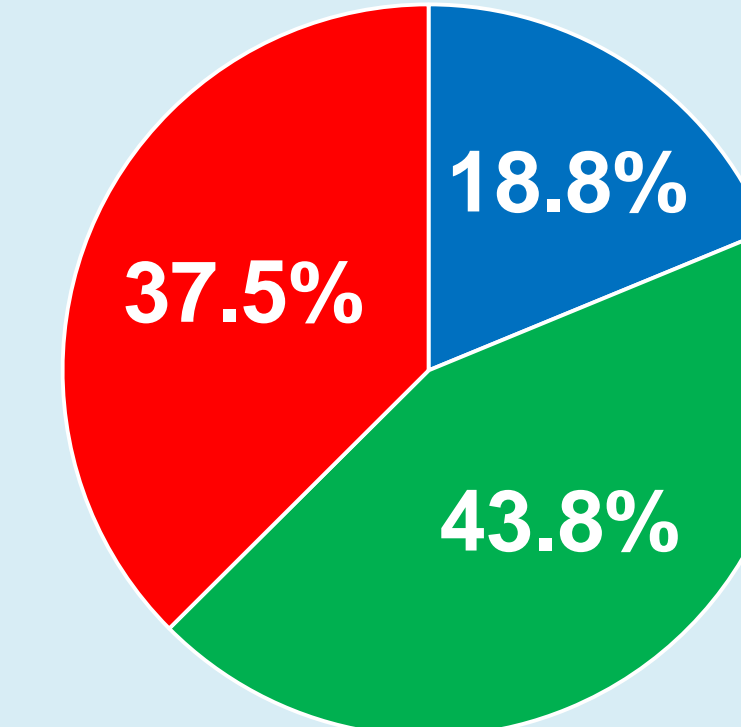


Appropriate for Gestational Age (N=18)

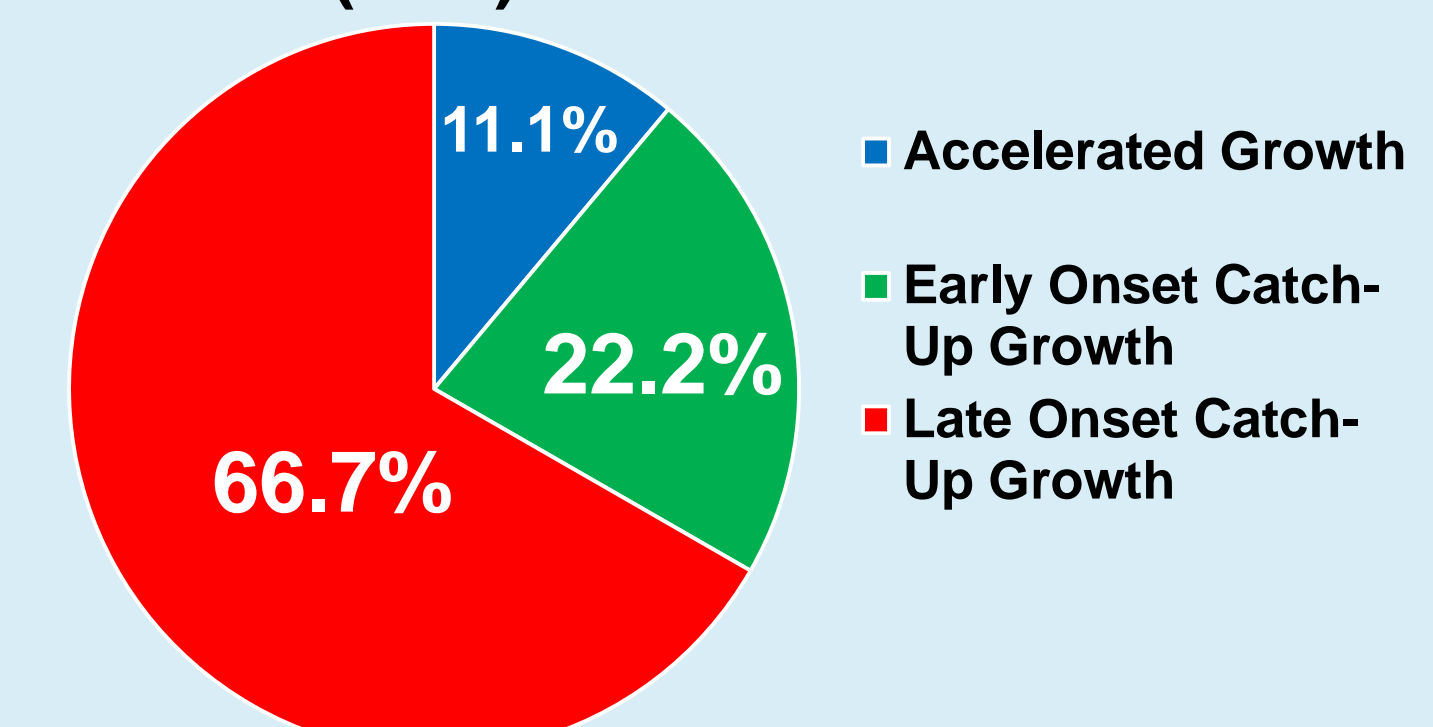


• Most infants (85.7%) born small for gestational age (SGA) had early onset catch-up growth, while infants born appropriate for gestational age (AGA) tended to have late onset catch-up growth (61.1%; $p=0.01$)

\leq High School (N=16)



\geq College (N=9)



• There was no significant association between maternal education and infant growth trajectories of BMI Z-score ($p=0.460$).

Conclusions

- ❖ Among infants of smokers, there are 3 common growth trajectories of BMI Z-score: accelerated growth, early and late onset catch-up growth.
- ❖ SGA is a strong predictor for early onset catch-up growth in BMI Z-score.
- ❖ Timing of maternal smoking cessation initiation during pregnancy had significant impact on infant trajectories of BMI Z-score: early quitting predicted late onset catch-up growth, while late quitting predicted accelerated growth.

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