

## Ironing out Anemia in Nepal

Alicia Greenalch (Actuarial Math), Allyson Mills (BME), Joseph Miceli (BME), Holly Nguyen (CS)  
Advisors: Professor Jill Rulfs (Biology) & Helen Vassallo (Management)

### Abstract

Iron deficiency anemia is a severe health problem in Nepal. It is especially harmful to pregnant women and children. To combat this deficiency, this project will fortify rice with iron and distribute to preschool age children in Nepal.

### Introduction

- Two billion people worldwide afflicted
- Caused by insufficient amount of iron in diet
- Anemia: when hemoglobin has no fuel to carry oxygen from the lungs to muscles and organs in the body

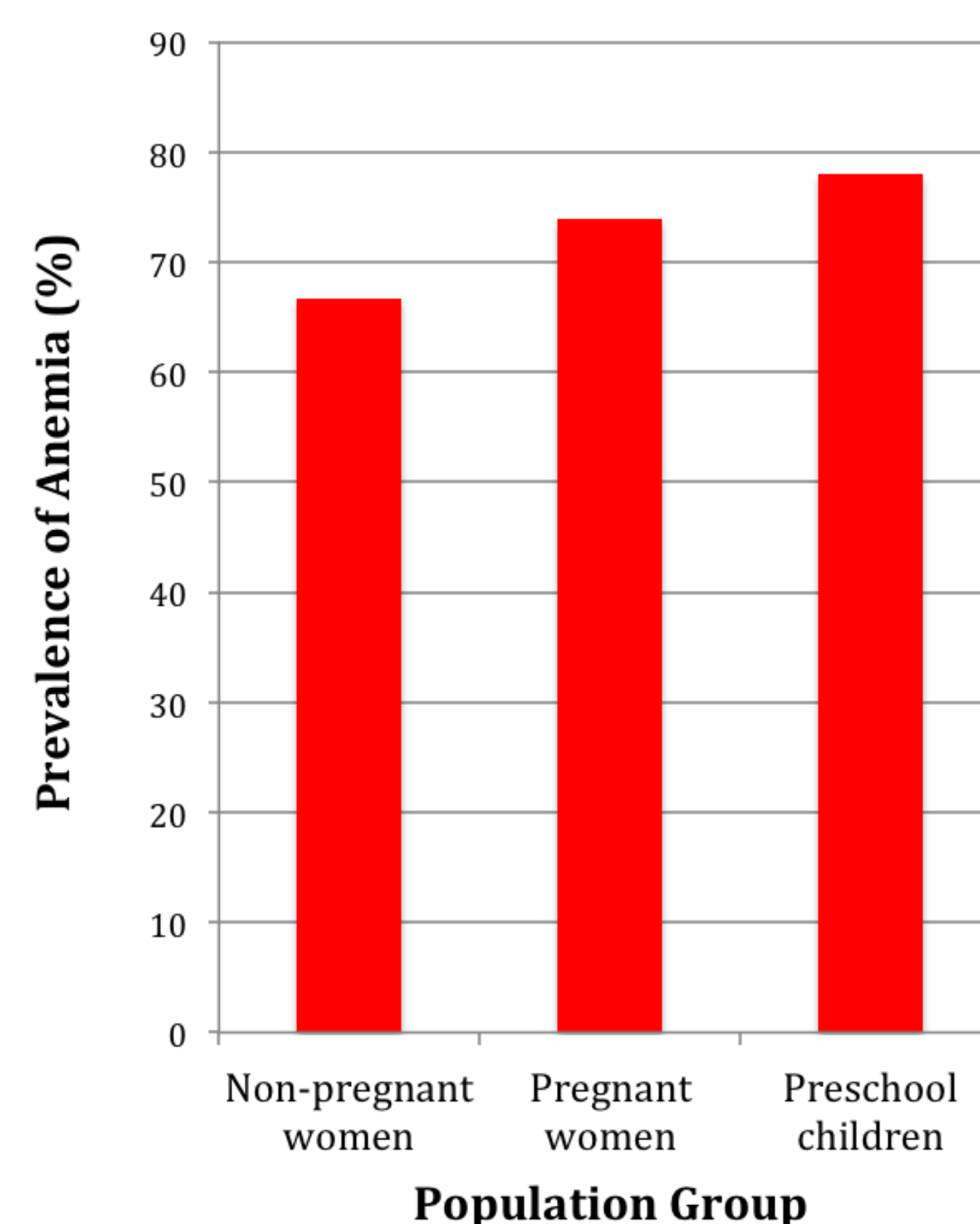


- Delayed physical and cognitive development in children
- Reduced physical performance in adults
- Consequences impact physical health but also the quality of life and a country's economic capabilities

### Goal/Objective

To reduce iron deficiency anemia in preschool age children (ages 3 to 6) in the Nepalese capital of Kathmandu.

### Prevalence of Anemia in Nepal by Population Group



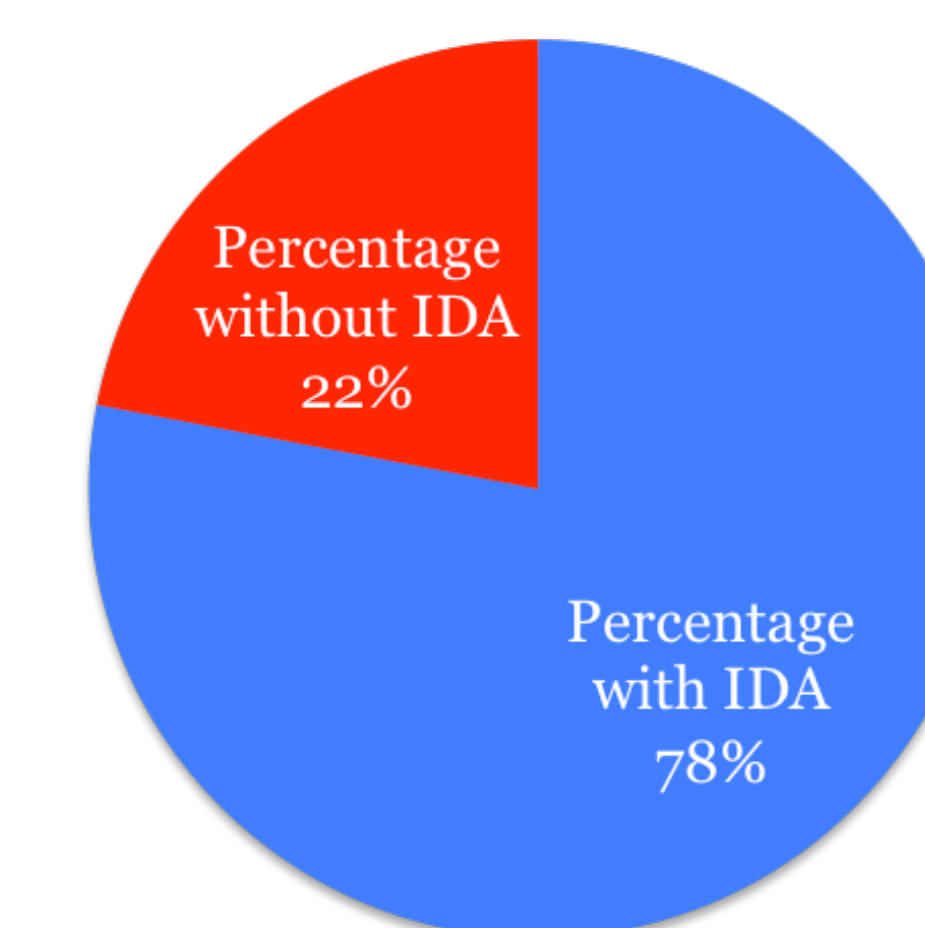
### Methods & Materials

- Program conducted at small English primary school, Nirvana Academy
- Pilot program using fortified rice mixed in with traditional lunch
- Produced in U.S. by Bon Dente International: Ultra-rice
- Existing distribution channel to India will be expanded to Nepal

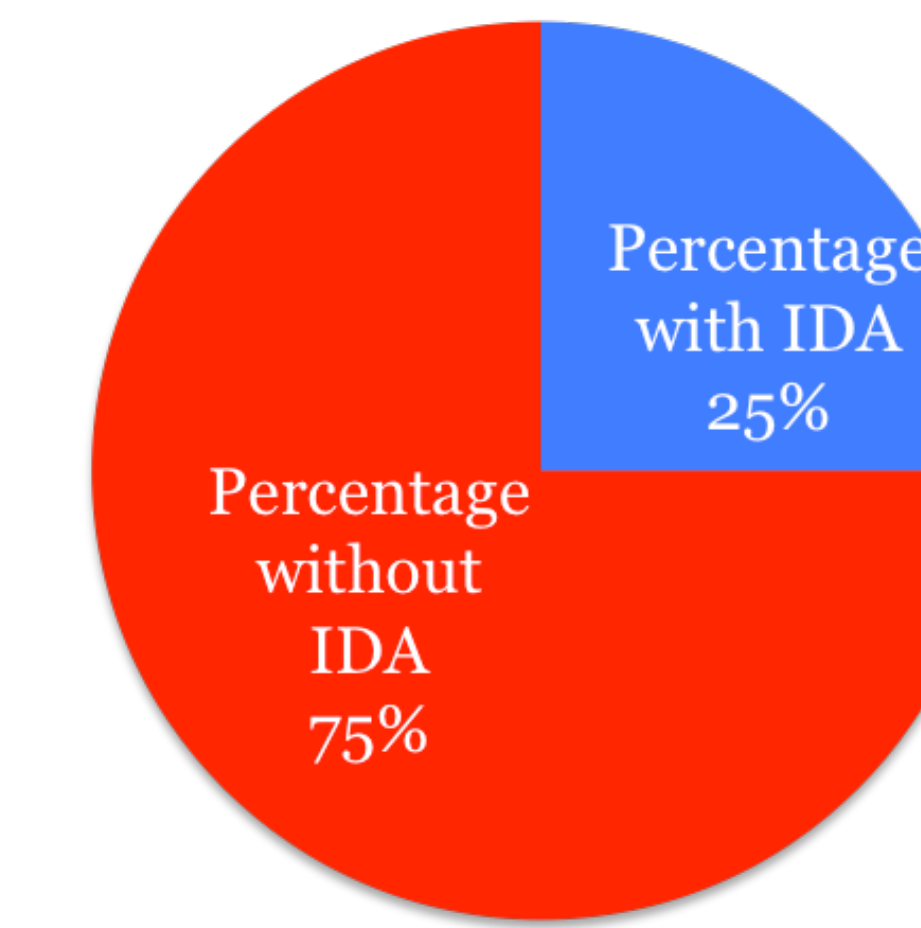
### Expected Results & Conclusion

- Lowered percentage of children affected by anemia (~25%)
- Effects of anemia will be reduced in at least two years
- Increased focus and achievement in school
- Increased productivity/efficiency in workforce meaning a better economy
- Successful model program for rural areas of Nepal and other countries

Percentage of children with iron deficiency anemia (pre iron fortification)



Percentage of children with iron deficiency anemia (post iron fortification)



### References

de Benoist, Bruno, et al. "Worldwide prevalence of anaemia 1993 - 2005: WHO Global Database on Anaemia". *World Health Organization*. 2008. Print.  
 "Anaemia Prevention and Control." *WHO*. World Health Organization. n.d. Web. 1 Nov. 2014.  
 "Micronutrient Deficiencies." *WHO*. World Health Organization. n.d. Web. 1 Nov. 2014.  
 World Health Organization. "Iron Deficiency Anaemia: Assessment, Prevention and Control." *WHO*. N.p., 2001. Web. 03 Nov. 2014.  
<http://diseasespictures.com/wp-content/uploads/2012/09/Iron-deficiency-anemia-6.jpg>