

Changing Native American Nutrition

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The Question

How do history and diet affect the health of Indian Country today?

Metabolic Disease: Diabetes and Obesity

- 2.2 times higher risk of diabetes than the Caucasian population (American Diabetes Association)
- Linked to many other health problems (NHLBI, APA)
 - heart disease, respiratory problems, high blood pressure, depression and stress

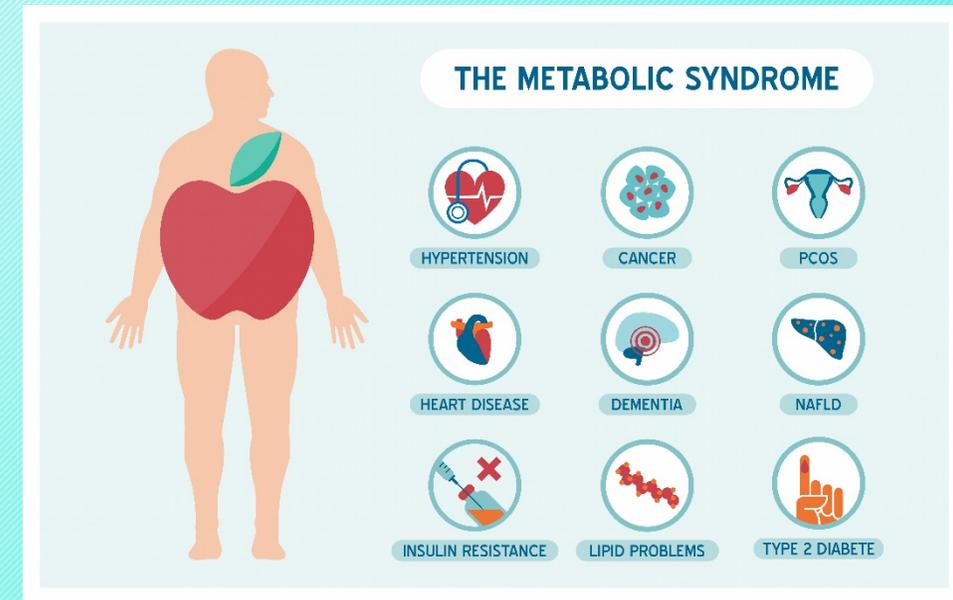


Photo: bphnews.com, The Link Between Metabolic Syndrome and BPH.

Prevalence of Metabolic Disease



*Photo: totsnsquats.com,
“They are what you feed them!”*



Indian Reservations and Starvation



Photo:
jewishjournal.com,
Hitler's Inspiration and
Guide: The Native
American Holocaust.

The Dutch Famine: 1944-1945

- Studies of children born to undernourished mothers suffered higher risks of many chronic diseases (T. Roseboom, 2006)
 - Cardiovascular disease (R. Painter, 2006), metabolic disorders (S. de Rooij, 2006), and breast cancer (R. Painter, 2006).
 - Maternal malnutrition increases the child's risk of dyslipidemia (T. J. Roseboom, 2000) and obesity (A. C. Ravelli, 1999) during the first trimester of pregnancy (R. Painter, 2006).



Photo: news.leiden.edu, Traces of Dutch 'Hunger Winter' in genetic material.

The Chinese Famine: 1958-1961

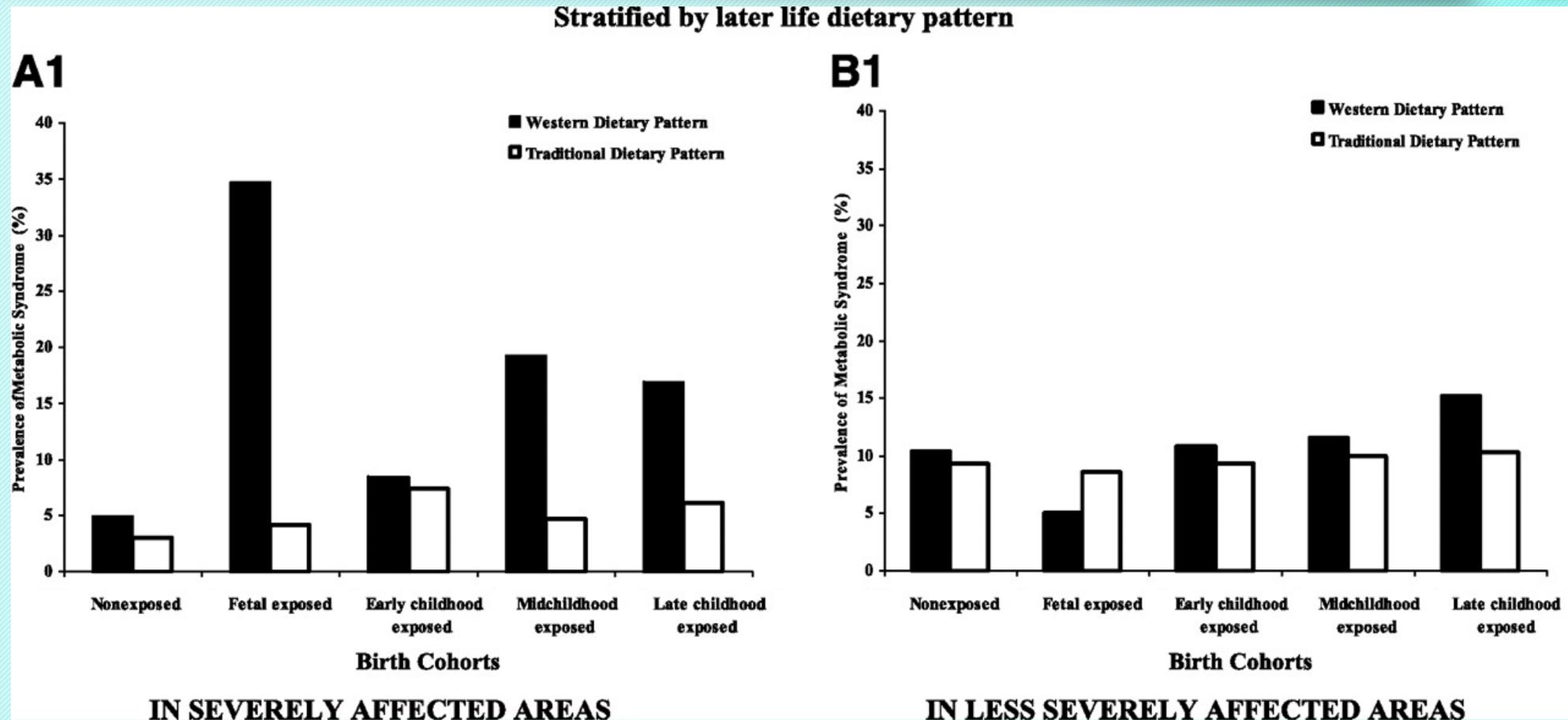


Figure: Y. Li, 2011.

The Chinese Famine: 1958-1961

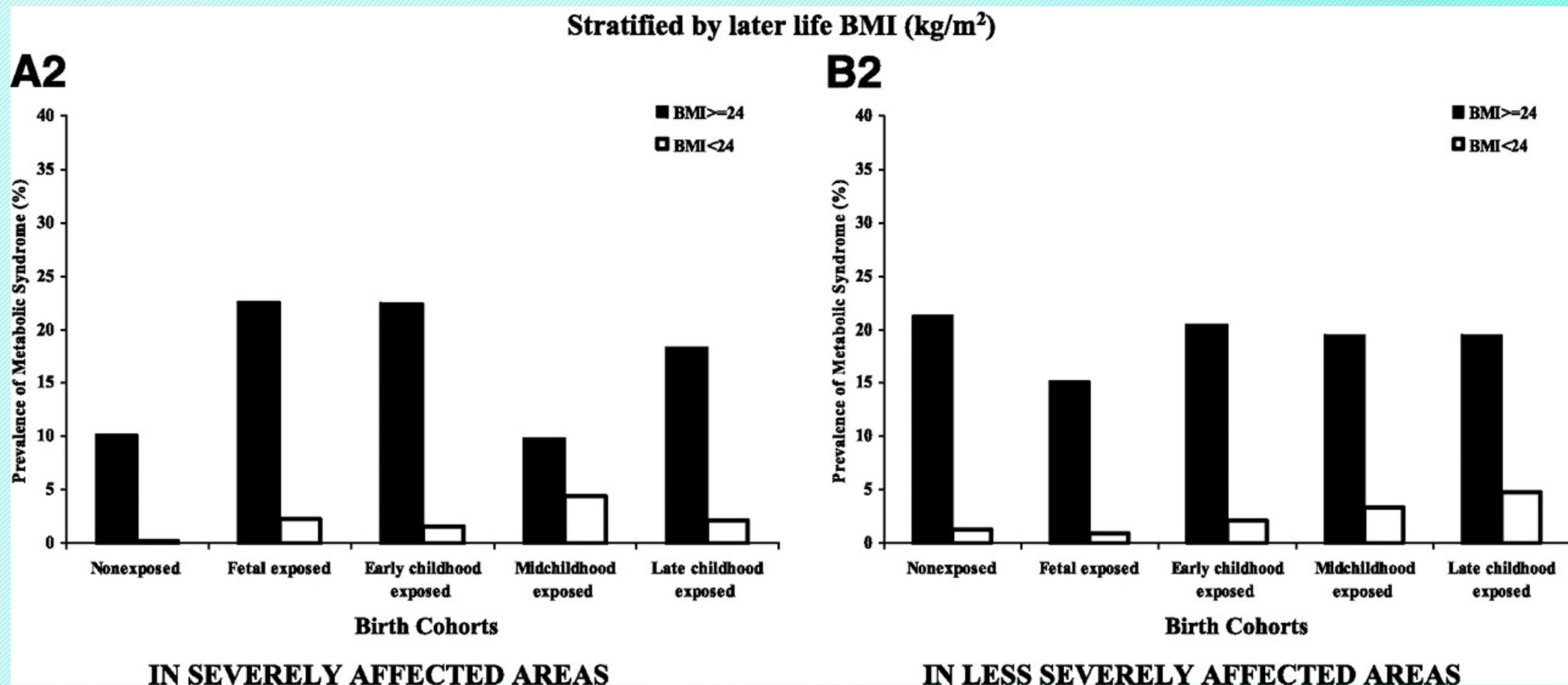


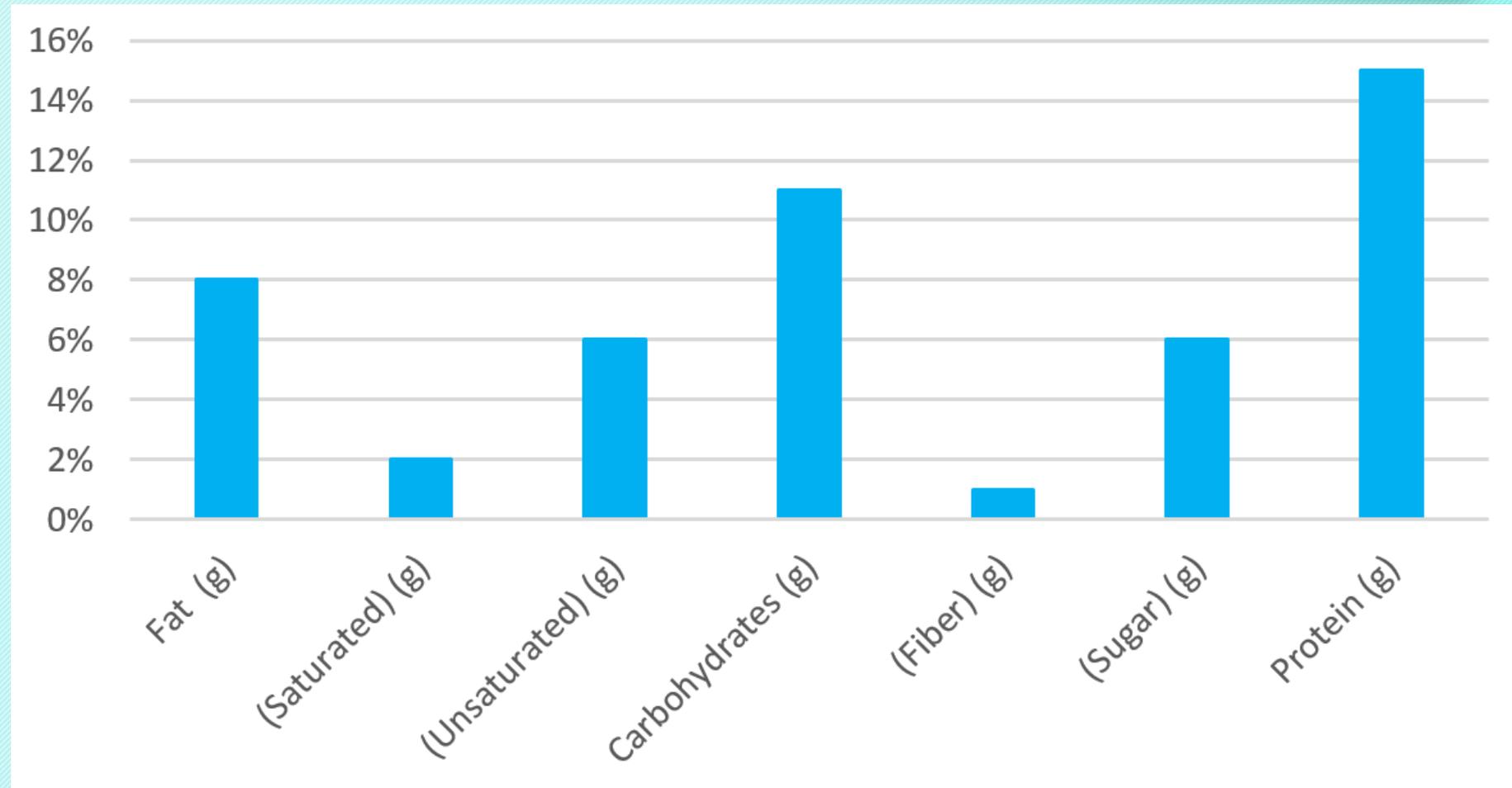
Figure: Y. Li, 2011.

Haudenosaunee Diet

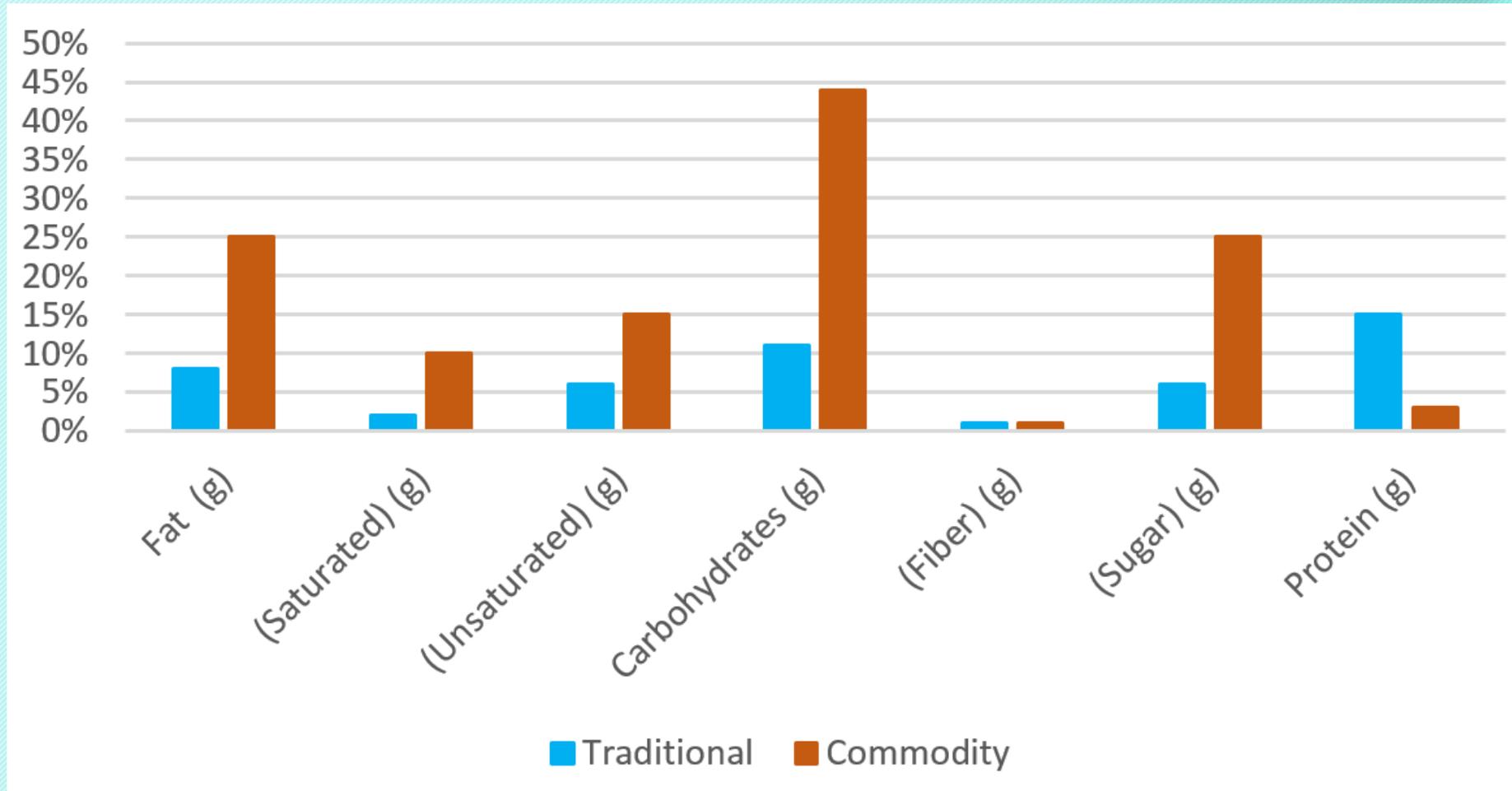


Photos (left to right): firspeoplesofcanada.com, emaze.com, kerrlife.com, empowher.com, thinglink.com, outdoornebraska.gov, modernfarmer.com.

Traditional Diet: Haudenosaunee



Traditional vs. Commodities



Starvation in Native America



CONSOLIDATED CHIPPEWA 54: A Chippewa baby in the traditional cradle board at an Indian rice camp at Little Rice Lake near Tower, Minnesota. Gordon Summers, 1940.

Photo: en.Wikipedia.org, Native American reservation politics

Genetic modifications during starvation

- Sheep deprived of B vitamins and methionine during pregnancy (K. D. Sinclair, 2007)
 - Health implications in adult offspring: high blood pressure, higher fat levels, and insulin resistance
- Deprivation of specific nutrients could alter how our genes are expressed.

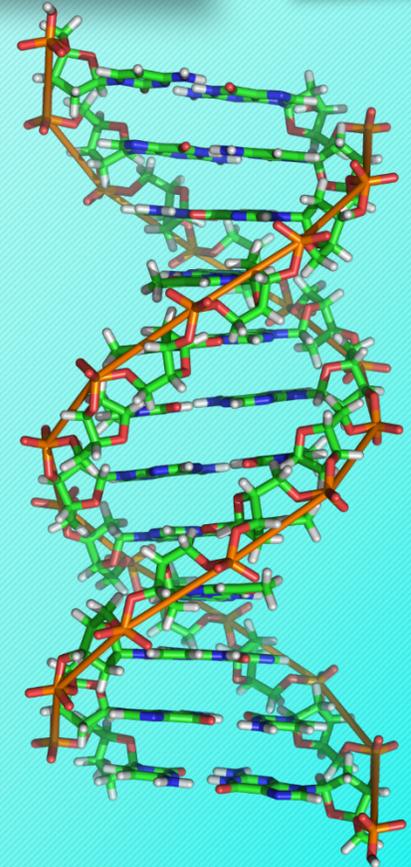


Photo: [Wikipedia.com](https://www.wikipedia.com), DNA

What Does This All Mean?

Are Native Americans doomed to
poor health?

No!!!

Intervention during pregnancy

- Alterations to gene expression can be counteracted by appropriate nutrient supplementation (D. C. Dolinoy, 2007; G. L. Wolff, 1998).
- Specific nutrient supplementation in the maternal diet may prevent transgenerational obesity in mouse models (R. A. Waterland, 2008).
- A cohort study showed an association between high levels of vitamin B9 in maternal diets and lower risk of obesity in children (G. Wang, 2016).

Intervention during infancy

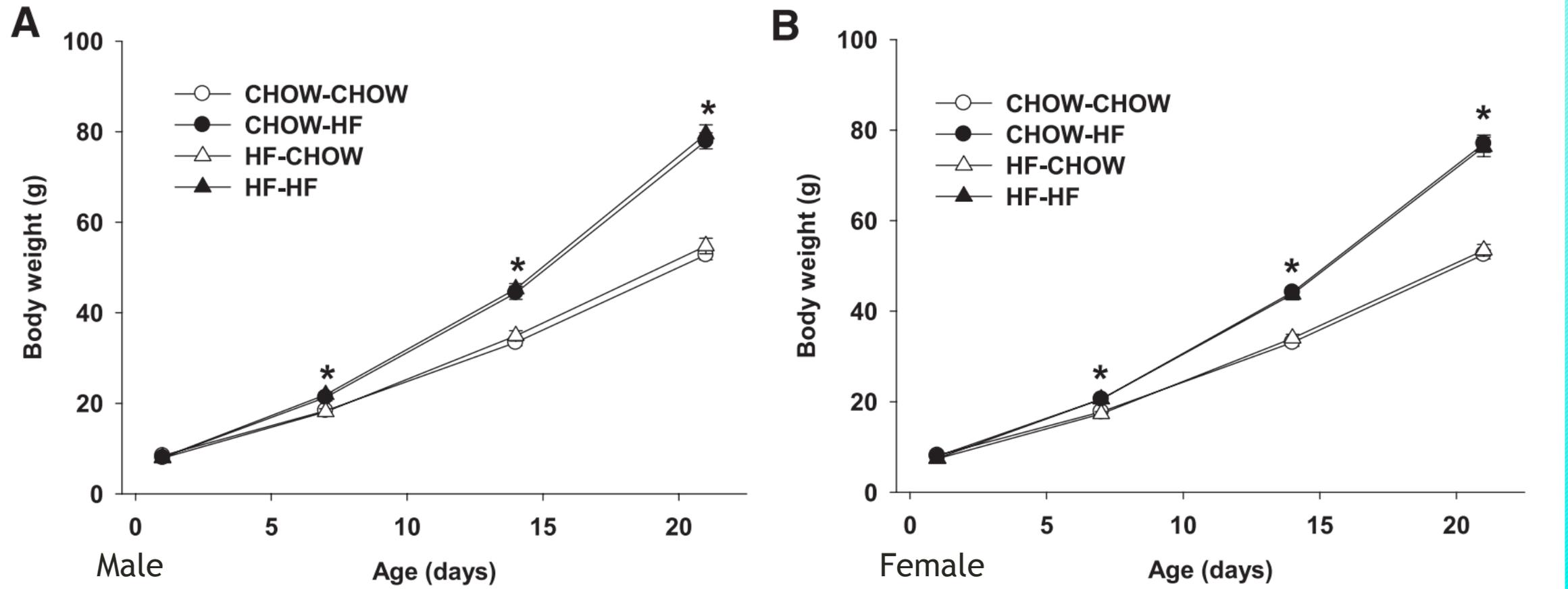


Figure: B. Sun, 2012.

Intervention childhood onward

- Critical periods of obesity and its complications (W. Dietz, 1994)
 - Gestation and early infancy
 - Between 5 and 7 y of age
 - Adolescence.



Photos (top, down): newskarnataka.com, greenqueen.com.hk.

Changing Our Nutrition



*Photo: twincities.com,
Blending series:
Minneapolis couple
tackles healthy eating
for all.*