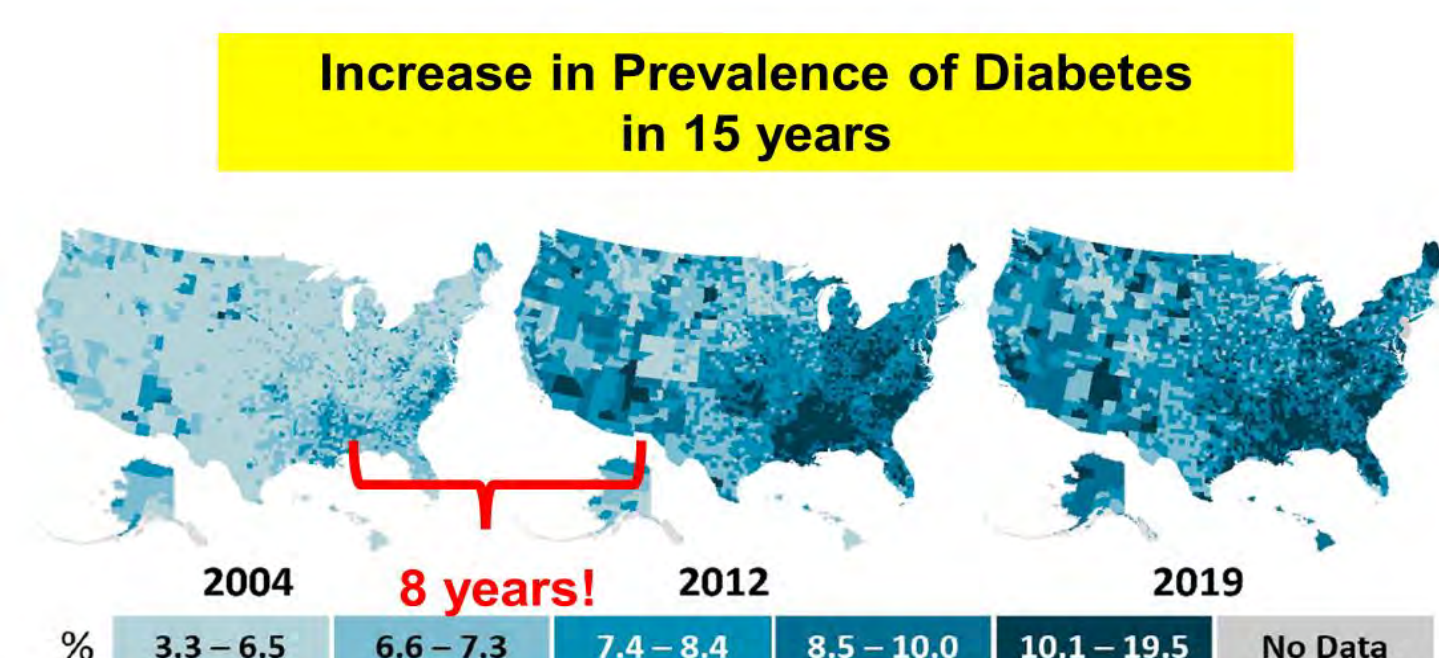


## THE PANDEMIC

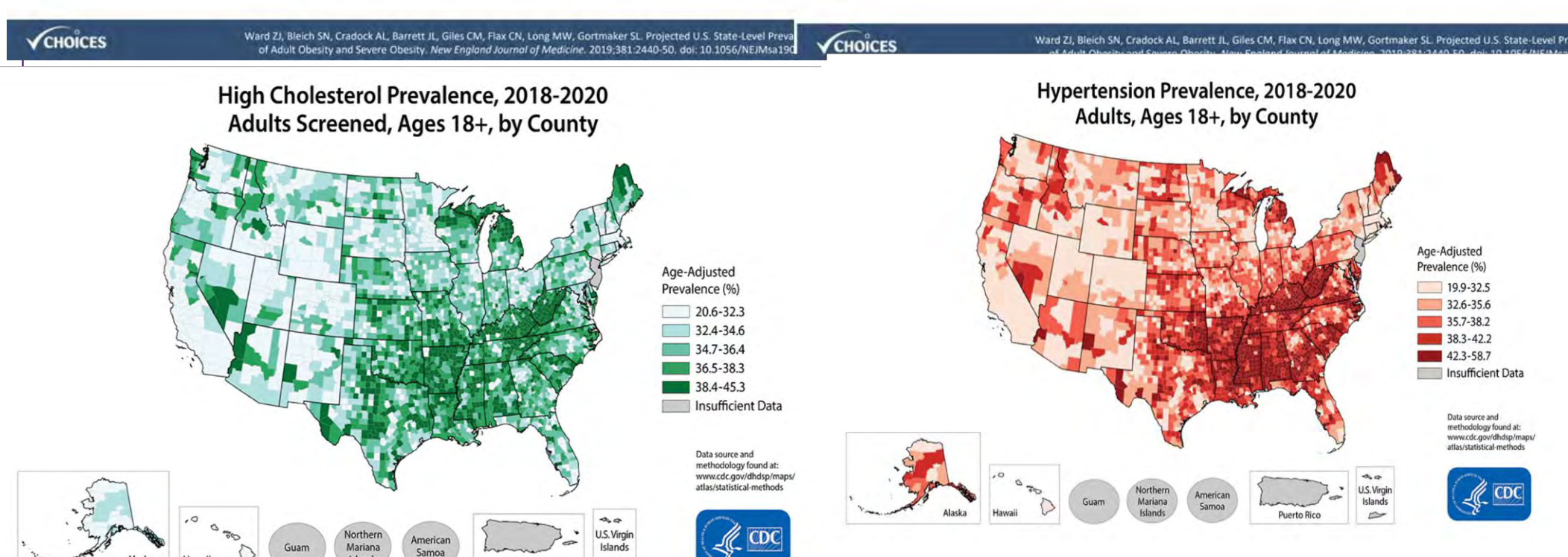
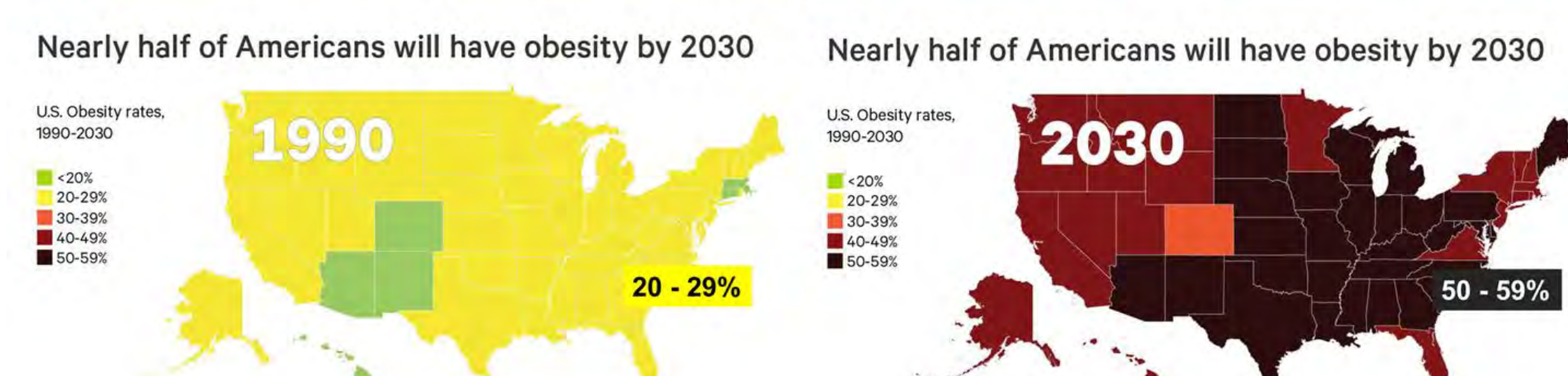
The prevalence of diabetes cases has risen dramatically in the 21<sup>st</sup> century.<sup>1</sup>



Data sources: US Diabetes Surveillance System; Behavioral Risk Factor Surveillance System.

Along with cases of obesity, high cholesterol, and hypertension.<sup>2,3</sup>

### The Future of Obesity in the U.S.



These conditions make up a group of diseases known as the metabolic syndrome.<sup>4, 5</sup>

## METHODS

PubMed was used to conduct a review of 2,254 publications related to diabetes and pesticides. Of these, 74 met the criteria for review in terms of the diabetogenic effects of chronic pesticide exposure to humans. After realizing that the timeline of pesticide use did not correlate with the dramatic increase in diabetes cases, we pivoted to reviewing current literature related to potential causes of diabetes, including signaling pathways, diet, the intestinal microbiome, and viruses.

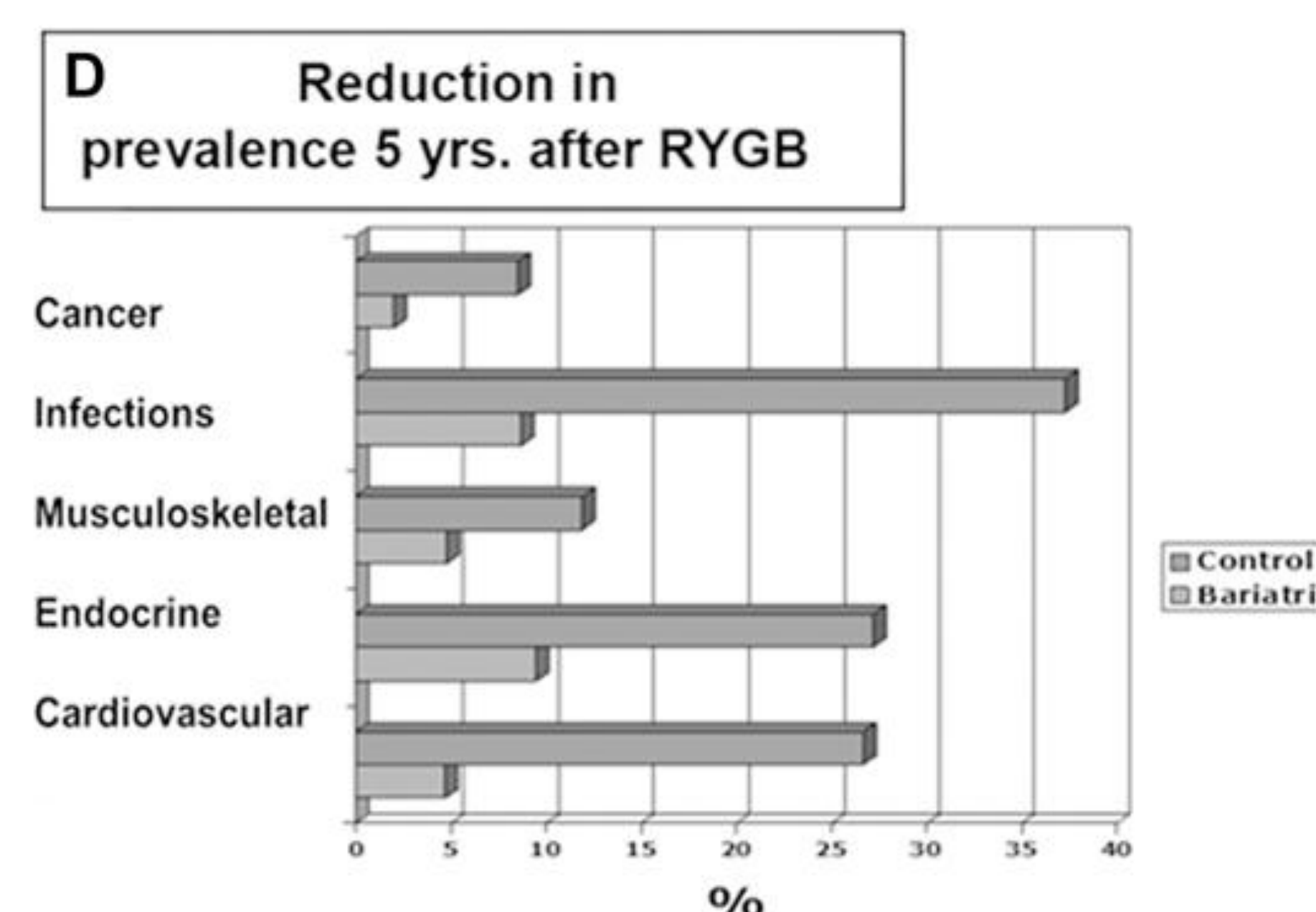
## REDEFINING THE METABOLIC SYNDROME

The current definition of the metabolic syndrome by the American Heart Association is that it *involves having at least 3 out of 5 conditions, i.e. central obesity, hypertension, hyperglycemia, high LDL and low HDL cholesterol values.*<sup>4</sup>

However, bariatric surgery and/or the administration of the new GLP1-agonist drugs leads to resolution of not only all five of these entities but also to a reduction in the prevalence of cancer, nonalcoholic steatotic hepatitis (NASH), polycystic ovary syndrome, an increase in cognition, and others.

These observations suggest that type 2 diabetes, obesity, NASH, and even some cancers are not separate diseases but are related in a syndrome. In short, the metabolic syndrome affects most if not all organ systems and cells.

The metabolic syndrome is not a group of separate diseases but rather multiple expressions of a shared defect in the utilization of carbohydrates and lipids.<sup>5</sup>



## A CRISIS WITHOUT A KNOWN CAUSE

**Despite the extent of this pandemic, the cause remains unknown.**

Recent statements by the Centers for Disease Control and Prevention that this it is due to changes in diet and behavior lack merit because behavior in regard to exercise and diet has not changed significantly in the last three decades.<sup>6</sup>

The suggestions that the 21<sup>st</sup> century pandemic may be due to pesticides, herbicides, or food additives are not supported by evidence.<sup>7</sup>

There are some early suggestions that viruses or changes in the microbiome may play a role, but there is also little evidence to support these assertions.<sup>8</sup>

## CONCLUSION

The world is confronted by the most serious pandemic in history that promises a catastrophic prevalence of strokes, blindness, renal failure, amputations, and other devastating outcomes of the metabolic syndrome. This is a crisis we can no longer ignore.

## PROPOSED FUTURE STUDY

In a population of people with similar backgrounds who are eating the same foods, take individuals with and without diabetes and compare:

- Mitochondria
- Foregut signaling pathways

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