

## Living Longer -- Living Better

The Health Experience of Seventh-day Adventists

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Data courtesy of  
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## Why study Adventists?

- If we believe lifestyle (especially diet) affects risk here is a population which contains the **whole spectrum**.
- About 50% are **vegetarians**
- About 25% are relatively **normal meat consumption**

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## Summary of AHS-1

- Adventists in California at least have a dramatic extension of life expectancy.
- Adventists have lower rates of heart disease, most cancers, and longer life expectancy.
- This seems to relate generally to increased intake of fruits, vegetables, nuts, whole grains, soy, and less meat.
- *The main effect appears to be a later age of death whatever the cause of death. Little impact on causes of death.*
- Vegetarian diet, nut consumption, physical activity, absence of past smoking, medium body weight, each appear to contribute an extra 1 ½ to 2 ½ years.
- Could there be an effect on the basic rate of aging? What else would affect all causes of death?

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## AHS-1 Summary

- Adventists have lower rates of heart disease, most cancers, and longer life expectancy.
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## Adventist Health Study-2 (AHS-2)

2001 – 2013+

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## Demographics

About 96,000 subjects  
More than 25,000 Black study members  
Mean age at enrollment 58.7 years  
Age range 30-110 years  
35% male, 65% female

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## What do we look like?

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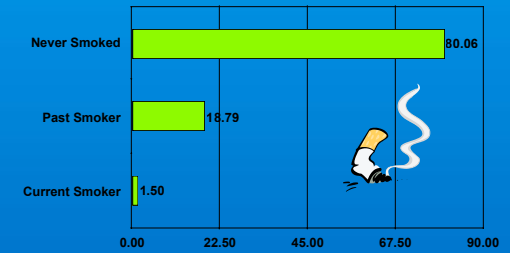
## The Oldest-Old in AHS-2

- 90-99 years of age --- 1043 subjects
- 100+ --- 46 subjects

They all completed a 50 page questionnaire!!

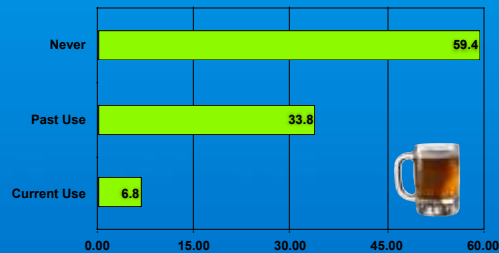
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## Smoking Status



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## Alcohol Use



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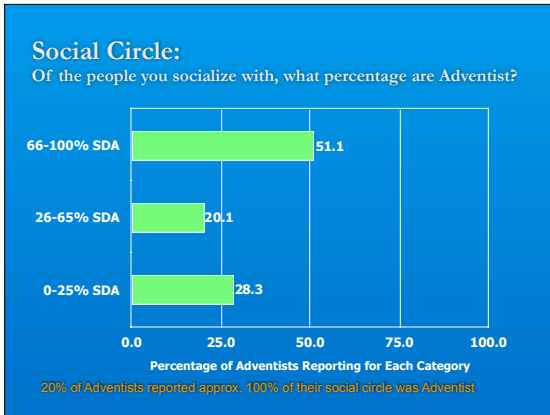
## Adventist Religion & Health Study

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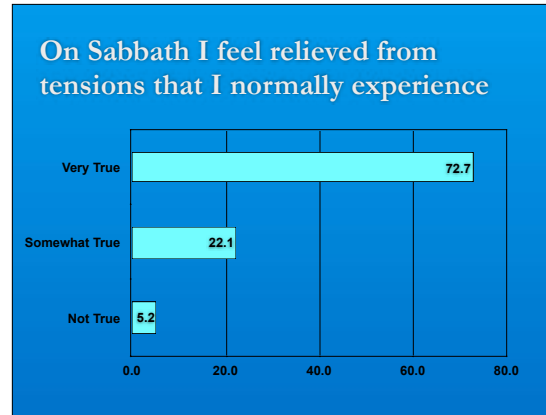
## Religion Sub-study Population

- 10988 members enrolled
- 3764 are Black subjects
- These were an approximate 11% sample of all Adventist Health study-2 members
- 1/3 attend churches <100 members
- 1/10 attend churches >1000 members

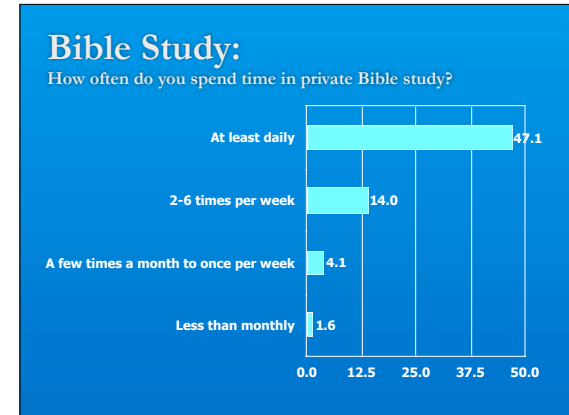
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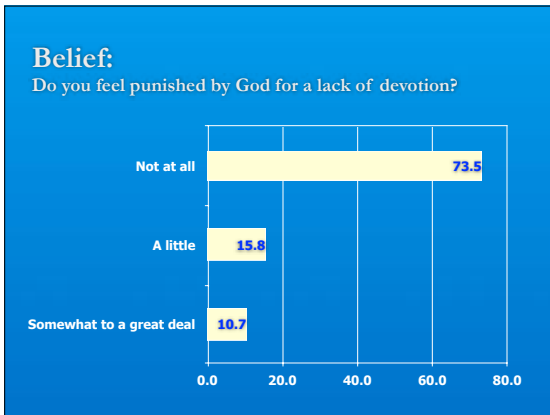
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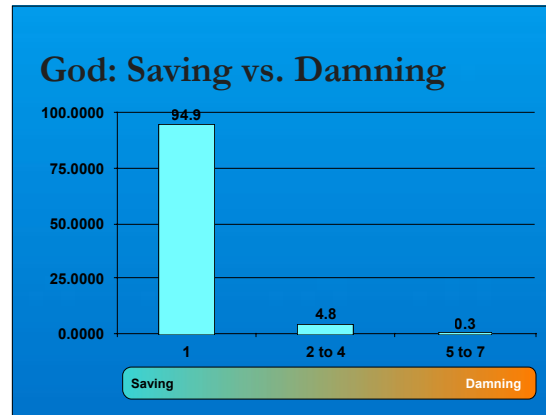
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## Dietary Characteristics

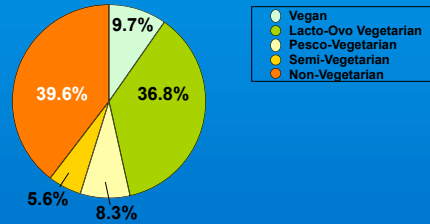
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## AHS-2 Counts of vegetarians

Vegans	9,062 (9.4%)
L-O vegetarians	30,103 (31.4%)
Semi-vegetarians	4,801 (5.0%) less than 1x week
Pesco-vegetarians	9,793 (10.2%)
Non-vegetarians	42,241 (44.0%) more than 1x week

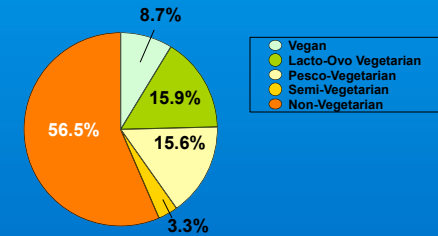
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## Dietary Categories: Whites



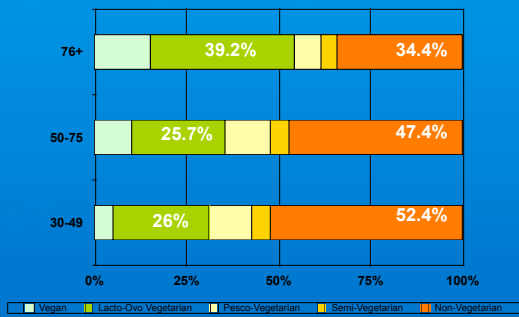
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## Dietary Categories: Blacks



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## Dietary Status by Age Group



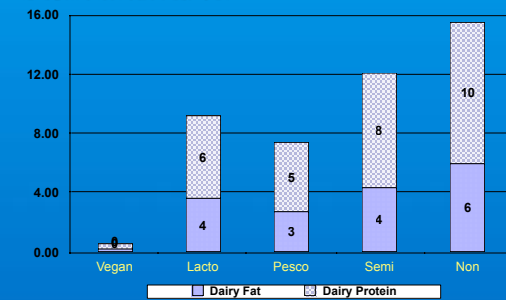
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## Daily Meat Intake – Non-Vegetarians

- AHS-2 Results:
- Black Non-Vegetarians: 61.1 grams per day
- White Non-Vegetarians: 41.3 grams per day

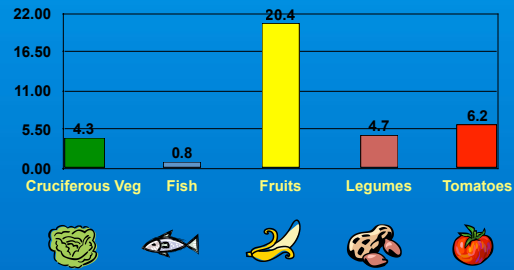
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## Dairy Intake



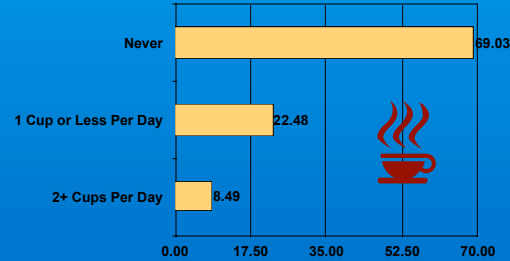
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## Diet: Mean Servings Per Week



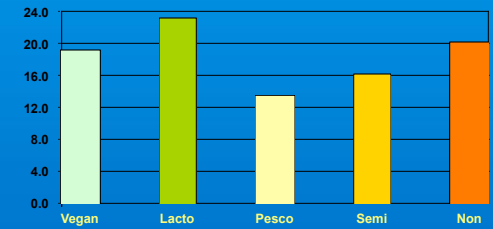
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## Coffee Consumption



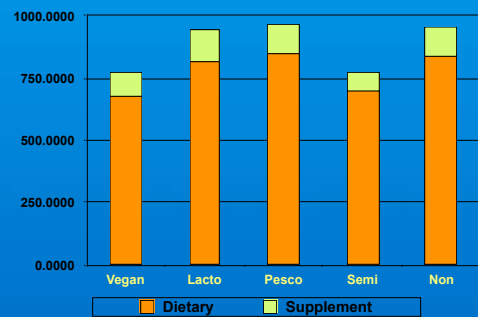
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## Vitamin B<sup>12</sup> Intake (Including Supplements)



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## Calcium Intake



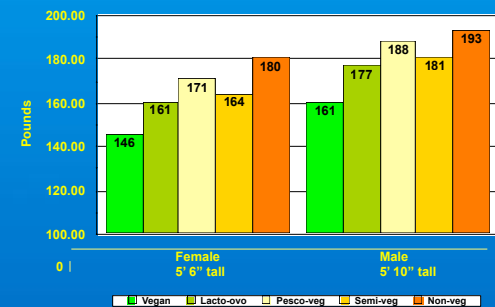
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## Risk factors

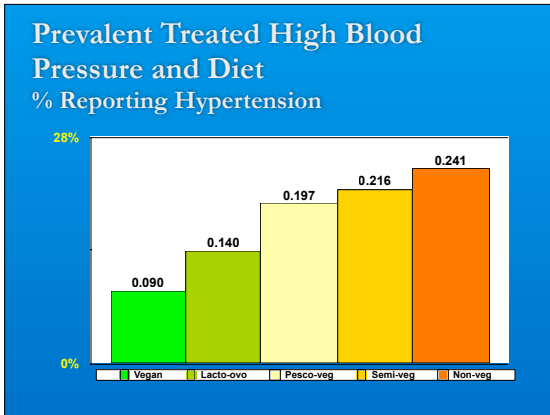
Diabetes  
Hypertension  
Overweight  
Hyperlipidemia

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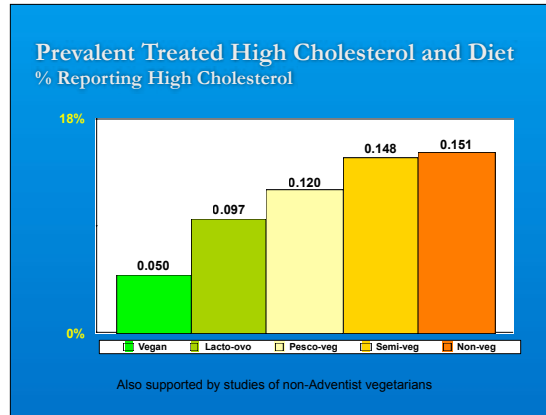
## Weight Differences Between Vegetarians and Non-Vegetarians



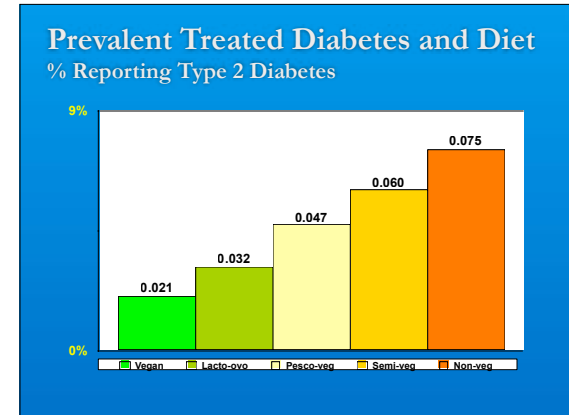
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### Diet and Total Mortality\*

Risk Factor	RR	95% Confidence Intervals
Non-vegetarian	1.00	
Vegan	0.81	0.71-- 0.93
Lacto-ovo-	0.89	0.82 - 0.96
Pesco-	0.78	0.69 - 0.88
Semi-	0.92	0.80—1.06

\*Adjusted for Age, gender, and Ethnicity.

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### Diet and Total Mortality at Different Ages (RR's)\*

Risk Factor	55 years	65 years	80 years	90 years
Non-vegetarian	1.00	1.00	1.00	1.00
Vegetarian	0.53	0.63	0.83	0.99

\*Adjusted for Age, gender and ethnicity.

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### Red Meat and Total Mortality\*

Risk Factor	RR	95% Confidence Intervals
No red meat	1.00	
1 oz/day	1.27	1.19- 1.35
2 oz/day	1.61	1.42 - 1.83
3 oz/day	2.05	1.70 - 2.47

\*Adjusted for Age, gender, and Ethnicity.

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### Red Meat and Total Mortality at Different Ages (RR's)\*

Risk Factor	55 years	65 years	80 years	90 years
None	1.00	1.00	1.00	1.00
1 oz/day	1.44	1.34	1.21	1.13
2 oz/day	2.07	1.80	1.46	1.28
3 oz/day	2.97	2.42	1.77	1.44

\*Adjusted for Age, gender and ethnicity.

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### Diet and CHD Mortality\*

Risk Factor	RR	95% Confidence Intervals
Non-vegetarian	1.00	
Vegan	0.86	0.67- 1.10
Lacto-ovo-	0.95	0.80 - 1.12
Pesco-	0.82	0.64 - 1.05
Semi-	0.79	0.58—1.07

\*Adjusted for Age, gender and ethnicity.

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### Diet and Total Cancer\*

Risk Factor	RR	95% Confidence Intervals
Non-vegetarian	1.00	
Vegan	0.78	0.65 - 0.93
Lacto-ovo-	0.92	0.83 - 1.02
Pesco-	0.95	0.82 - 1.11
Semi-	0.80	0.66 - 0.97

\*Adjusted for Age, gender and ethnicity.

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### Red Meat and Colon Cancer\*

Risk Factor	RR	95% Confidence Intervals
No red meat	1.00	
1 oz/day	1.35	1.07- 1.71
2 oz/day	1.83	1.14 - 2.93
3 oz/day	2.48	1.22 - 5.03

\*Adjusted for Age, gender, and Ethnicity.

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### Diet and Breast Cancer\*

Risk Factor	RR	95% Confidence Intervals
Non-vegetarian	1.00	
Vegan	0.56	0.36-- 0.88
Lacto-ovo-	0.89	0.70 - 1.13
Pesco-	0.81	0.57 - 1.16
Semi-	0.76	0.49—1.19

\*Adjusted for Age, gender and ethnicity.

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### Diet and Prostate Cancer\*

Risk Factor	RR	95% Confidence Intervals
Non-vegetarian	1.00	
Vegan	0.68	0.44- 1.05
Lacto-ovo-	0.99	0.83 - 1.18
Pesco-	0.94	0.64 - 1.38
Semi-	0.93	0.61—1.43

\*Adjusted for Age, gender and ethnicity.

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## Conclusions

- In AHS-2 preliminary results show benefits for all vegetarian categories by their lower risk of death, and lower risks of a new cancer, this differing by cancer grouping.
- At present it looks like the total vegetarian and pesco-vegetarian diets may present some advantages, but this finding is preliminary

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- It is also very clear that vegetarians adhere to recommended preventive testing considerably less frequently, particularly the vegans.
- Do they have less trust in traditional medicine?
- Do they feel less vulnerable because of their lifestyle?
- Are they losing some of the benefits of their lifestyle?

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The vegetarian advantage is very clear almost everywhere!

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## What is the Optimum Vegetarian Diet!

So far pure vegetarians are looking very good, but not yet convincingly superior to lacto-ovo vegetarians.

We need to keep looking as the data grows more robust.

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## A Healthy Dairy-free Vegetarian Diet

- Quality depends on the overall character of the diet, not just the absence of animal products.
- To obtain calories pure vegetarians usually eat more fruit, vegetables, legumes, seeds, nuts, and berries—packed with healthy phyto-chemicals.
- What about pure vegetarian diets where this is NOT so? Exposed to “downsides” but not the “upsides” of the animal-free diet.

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## Overall Conclusions

- The **health advantage** experienced by the more conforming Adventists over many years is remarkable.
- However, **strong conclusions** require **strong evidence**.
- AHS-2 will provide this. We have data from **96,000** Adventists across the U.S and Canada, a large number. This improves precision and helps rule out chance as an explanation.

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## Practical Conclusion

- The **evidence is right now sufficient** to support a diet that:
  - i) may still include some **lacto-ovo** foods;
  - ii) is otherwise **plant-based, or trends strongly in that direction.**
- If you wait to modify your lifestyle until all the details are known--for sure you will be dead!