



# **Prevalence of Hypertension among Puerto Ricans Compared to Mainland Hispanics**

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# Background

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- PR men vs. Framingham men (45-64 yrs): lower systolic blood pressure<sup>1</sup>
- HHANES: mainland PR's had low hypertension prevalence similar to Mexican Americans (age-adjusted)<sup>2,3</sup>
- PR islanders vs. NYC PR's: age and sex-adjusted SRR=1.4 (1.2, 1.9)<sup>4</sup>

1. *Gordon et al, 1974*
2. *Pappas et al, 1990*
3. *Crespo et al., 1996*
4. *Ho et al, 2006*

# Methods

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- BRFSS 2005 data: a US-wide telephone survey
- Hispanics only (N=25,539)
- Restricted to non-diabetics (N=22,873)
- Restricted to those who answered the question regarding the hypertension diagnosis (N=22,284)
- 4,577 participants (20.54%) self-reported hypertension diagnosis by a physician
- 3,035 were residing in Puerto Rico (13.62%)

# Data Analyses

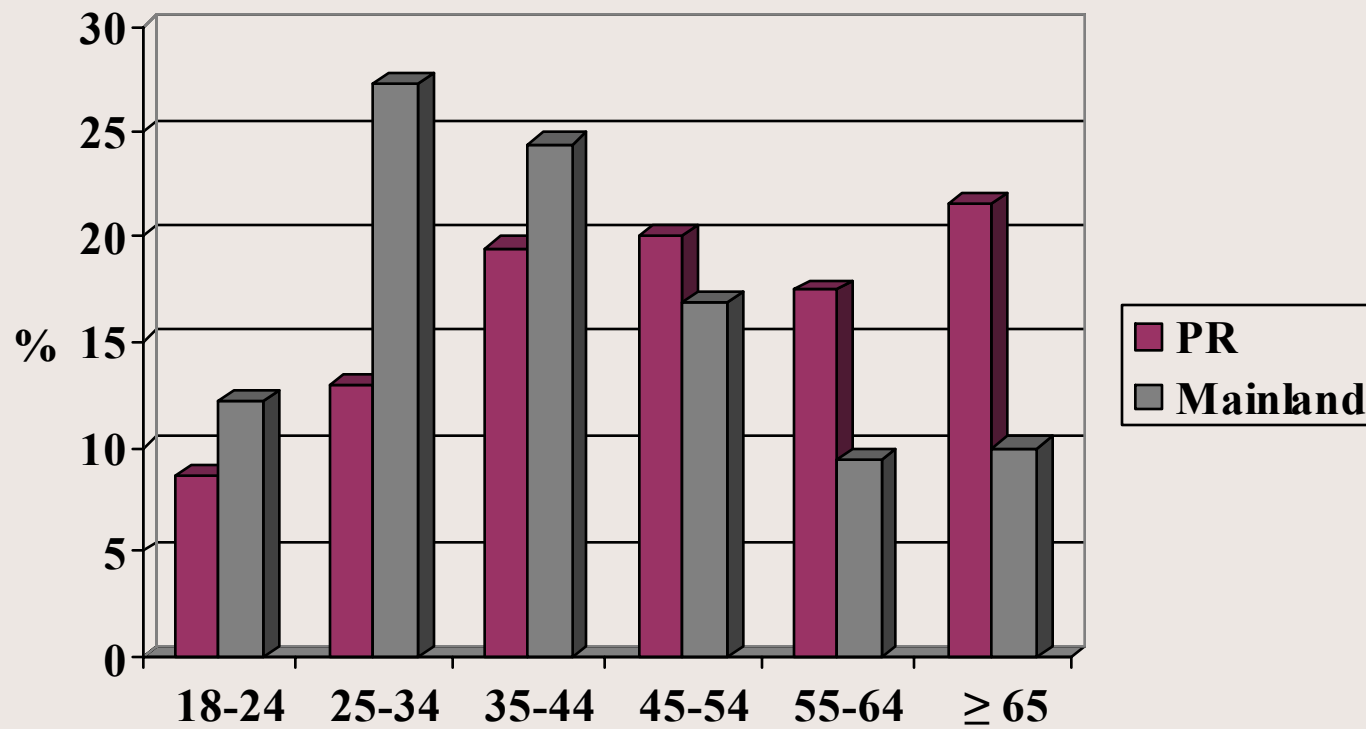
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- Outcome: prevalence of self-reported hypertension (yes/no). If a female reported gestational hypertension only, she was counted as a non-case
- Exposure: PR residence
- Analysis: Multivariate logistic regression, Odds Ratio (95% CI)
- Software: SAS v. 9.1 (SAS Institute Inc., Cary, NC)

## Cardiovascular risk factors (%)

	Puerto Ricans (N=3,035)	Mainland Hispanics (N=19,249)
Male Gender	35	39
Heavy Drinking	3	4
Binge Drinking	11	13
Overweight or Obese (BMI $\geq$ 25)	61	57
Smoking		
Current	12	18
Former	16	18
Never	73	64
No moderate or vigorous physical activity	37	17
$\geq$ 5 fruits and veg/day	16	22

# Age



# Data Analyses

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- Age-adjusted OR: 1.53 (1.4; 1.68)
- Multivariate-adjusted OR: 1.47 (1.33; 1.63)

The model adjusted for:

- Age (10-y groups)
- Gender (male, female)
- Heavy drinking (>2/day men; >1/day women)
- Binge drinking (>5/occasion)
- Overweight or obese (BMI $\geq$ 25)
- Smoking (never, current, former)
- Physical activity (5 groups, according to recommendations for moderate and vigorous physical activity)
- Fruit and vegetable intake (<1/day, 1-2/day, 3-4/day,  $\geq$ 5/day)

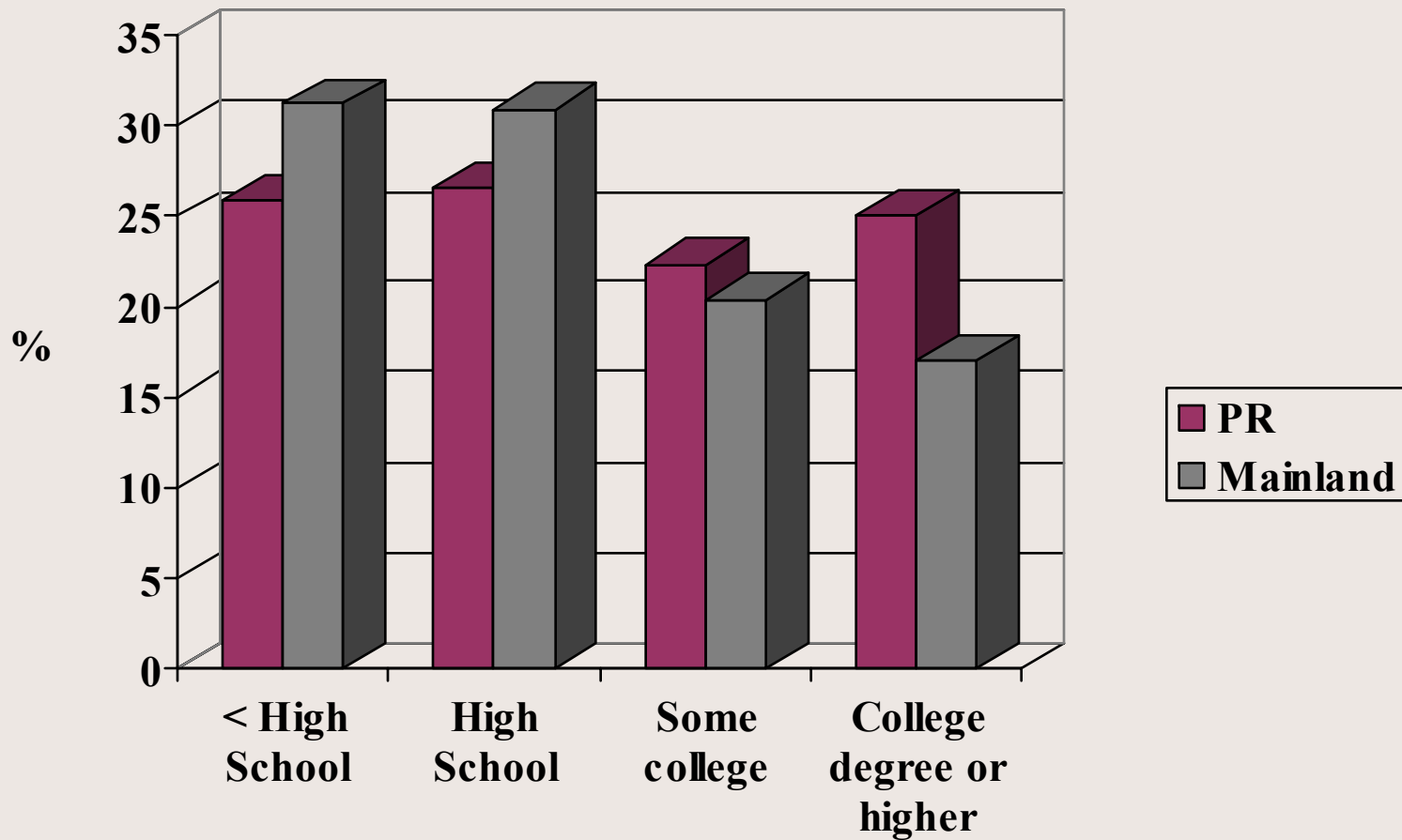
# Additional analyses

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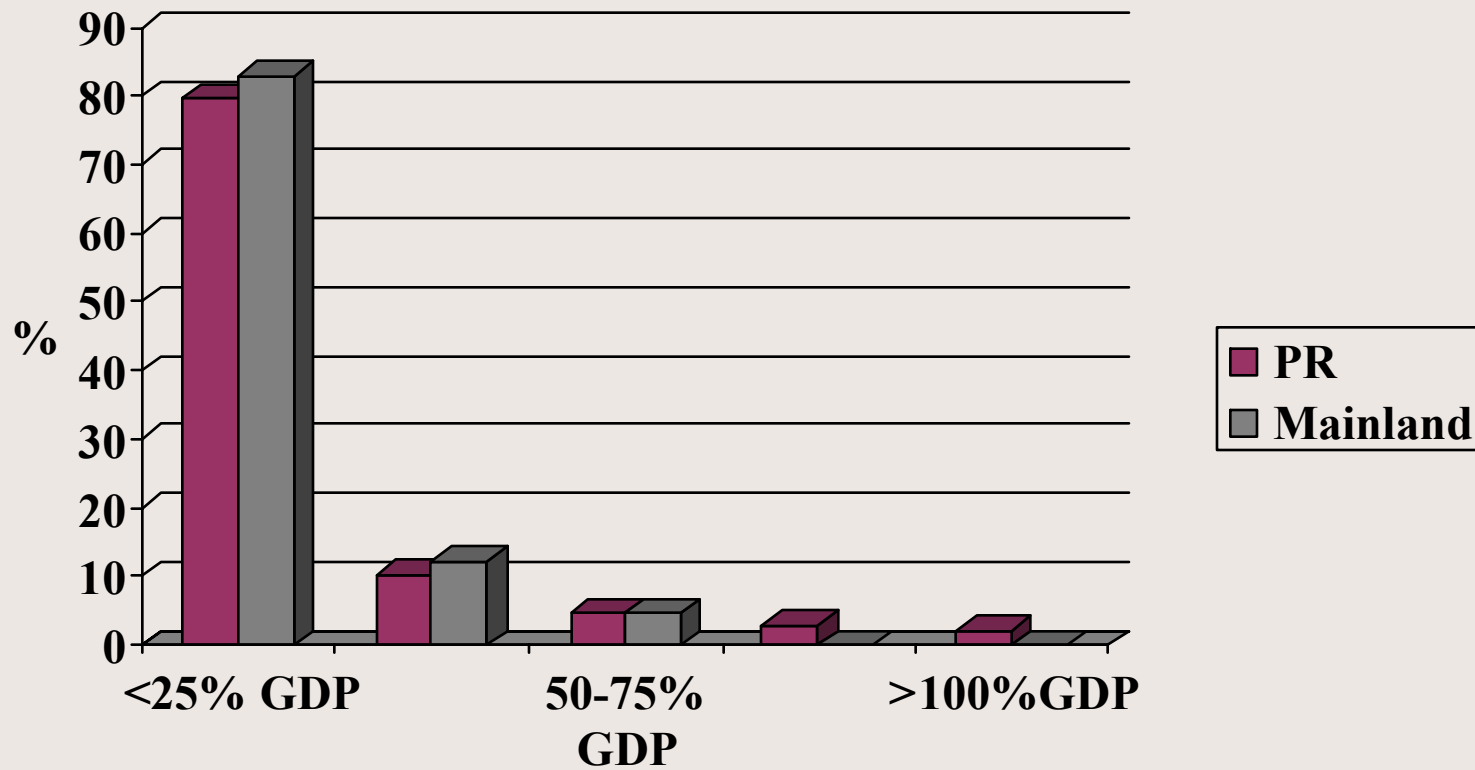
- Adjusted additionally for SES (education, income, health coverage)
- Subgroup analyses



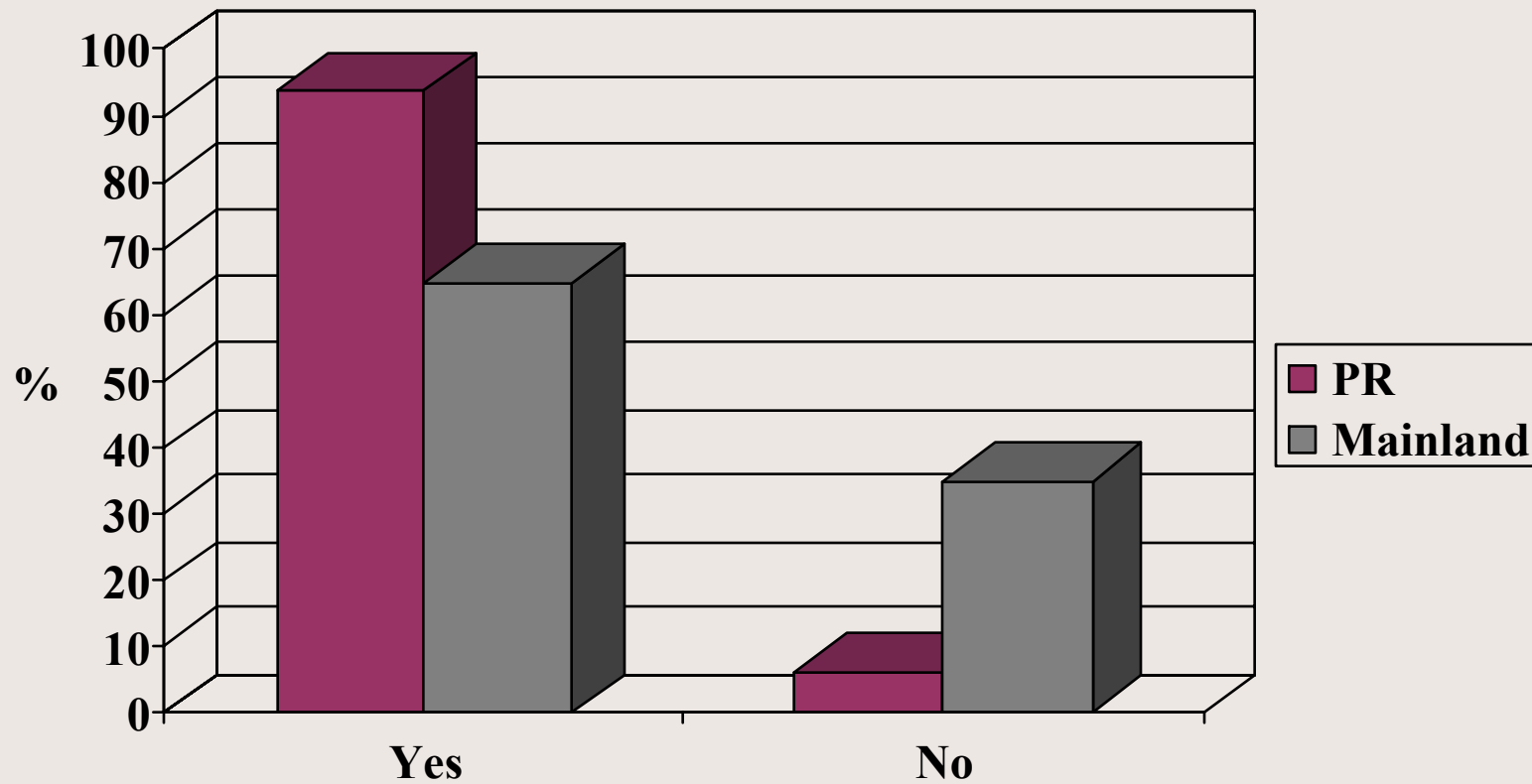
# Education



# Per capita income as % of GDP



# Any health insurance



# Additional analyses

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- After additionally adjusting for income, education and health coverage in multivariate models Puerto Ricans still had increased odds of hypertension diagnosis:

OR=1.49 (95% CI: 1.33, 1.66)

# Subgroup analyses

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- Those consuming  $\geq 3$  fruits and vegetables per day (N=11,667): OR=1.58 (1.35, 1.86)
- Never smokers (N=14,462): OR=1.66 (1.45, 1.91)
- Those with income  $> 25\%$  GDP (N=3,346): OR=2.35 (1.75, 3.16)
- Those not having moderate or vigorous exercise (N=4,440): OR=1.22 (1.0, 1.5)

# Discussion

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- Overall, after adjusting for the risk factors, consistent with previous findings on islander Puerto Ricans vs. NYC PRs
- Restriction to certain groups increased the effect estimate, with the exception of sedentary people
- Potential explanations include :
  - Residual confounding by diet and physical activity
  - Cultural and genetic differences between Hispanic subgroups
  - More detection of hypertension in Puerto Ricans possibly due to higher insurance coverage

# Strengths and Limitations

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- First study to identify higher hypertension prevalence in Puerto Ricans independent of major known risk factors
- Misclassification of the outcome (self-reported hypertension)
- Residual confounding: physical activity, salt intake, dietary factors
- Heterogeneous nature of the comparison group

# Summary and Future Directions

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- After adjusting for major risk factors Puerto Ricans had 50% higher odds of having hypertension diagnosis compared to Hispanics residing in the mainland US
- Future studies should focus on environmental and genetic factors that might explain the differences



# Thank you

