



Exploring Cardiovascular Disparities Among Young U.S. Women: Race, Healthcare Access, Socioeconomic Status & Geographical Location

Research Question

What are the disparities in cardiovascular outcomes among women of varied racial backgrounds, factoring in their access to healthcare, socioeconomic status, and geographical location?

Significance

- Approximately 1/3 of deaths in the US are caused by Cardiovascular Disease (CVD) (Bundy et al. 2020)
 - Historically CVD has been treated as exclusive to men (Dougherty 2011)
 - Women have been under- and misdiagnosed → Increase in mortality rate (Sobhani et al. 2018)
- CVD and its risk factors disproportionately affect minority women (Balla et al. 2020)
- Women are unaware of their risk:**
 - Believe they are inherently healthier than men (Gooding et al. 2020)
 - Associate it with older women (Regitz-Zagrosek 2012)
- Exploring Cardiovascular Risk (CVR) with social determinants of health can identify where the disparity is mitigated or exacerbated → Inform policy initiatives

Methods

Data Sample

- Data Source:** The National Longitudinal Study of Adolescent to Adult Health (Add Health)
- Utilized Waves I, IV, and V
- Average Age:** 37.9 years of age
- Exclusions:**
 - Pregnant/Unsure women
 - International residents
- The sample size was 1,862 women

Measures

- Body Mass Index (BMI)
- Diabetes
- Systolic Blood Pressure
- Diastolic Blood Pressure
- Low-Density Lipoproteins (LDL)
- High-Density Lipoproteins (HDL)

Coding

- Top 25% for Variables 1-5 & Bottom 25% for HDL = 1 point
- Bottom 75% Variables 1-5 & Top 75% for HDL = 0 points
- Continuous Measurement:** Range of 0 to 6 point

Data Analysis

- Cardiovascular risk on race
- Cardiovascular risk on race and geographical location
- Race, geographical location, and Income
- Race, geographical location, and Education
- Race, geographical location, and SES (Income & Education)
- Cardiovascular risk on race, geographical location, SES, and access to care

Conclusion

What I learned?

- Asian and Other Non-Hispanic women had the lowest CVR
- American Indian and Black Non-Hispanic women had the highest CVR
 - Increased risk caused by race, region, and educational attainment level
 - Income narrowed the disparity

Future Research:

- Continue study as currently constructed → “Age as a leveler” (House et al. 1994)
- Addition of mental health to the other independent variables (Chaddha et al. 2016)

New Questions:

- Impact of diet, nutrition, and exercise
- Inclusion of wealth (Oberlander et al. 2020 & Williams and Purdie-Vaughns 2016)

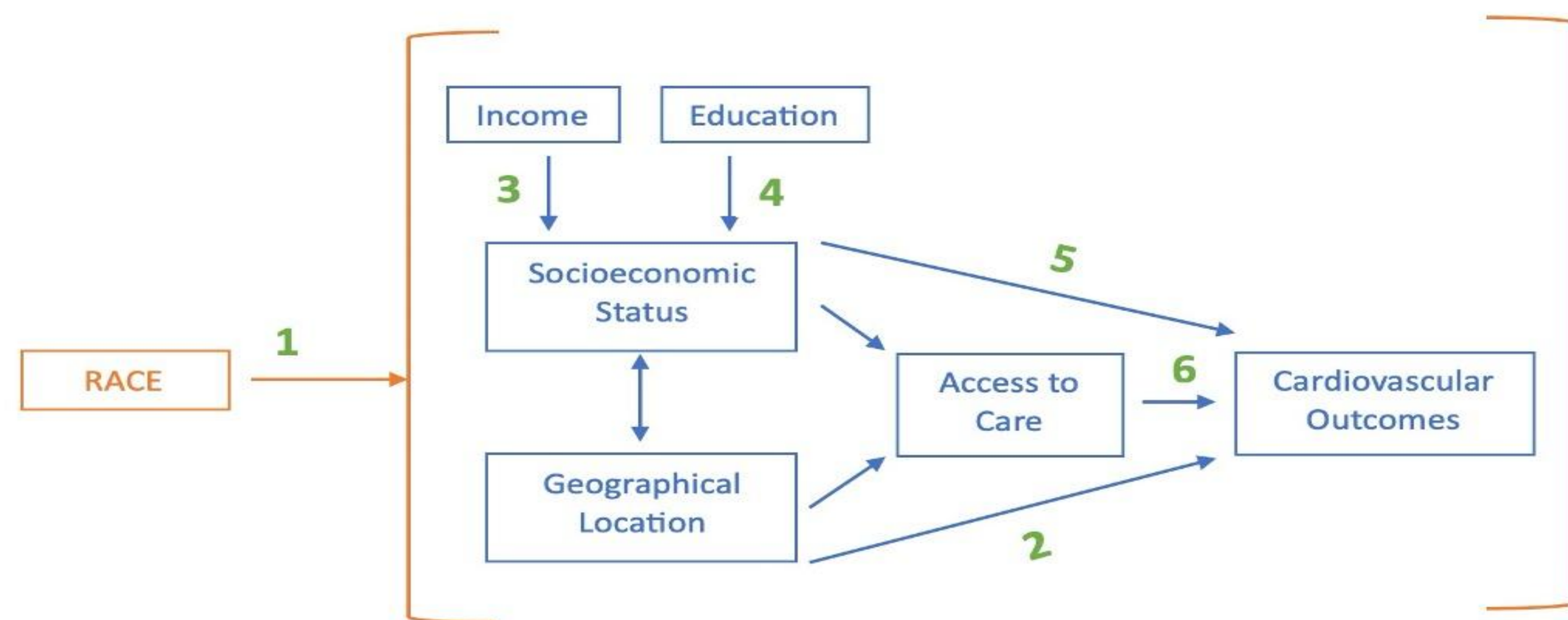
Two-Fold Objective:

- Bring awareness to women’s risk
- Broaden our view of cardiovascular risk

Acknowledgments

Sincere thanks to: Dr. Robert Hummer, Dr. Kate Weisshaar, Athena Owirodu, Dr. Neal Caren, Rene Iwo, my Sociology Honors Thesis Cohort, and last but not least family and friends.

Conceptual Framework



Depicts the Relationship Between Race and Cardiovascular Outcomes, With Research Questions Noted by the Numbers

Linear Regression Results

Table 4: Race Disparities Cardiovascular Risk Assessment Using Six Linear Regression Models (Models 1-6) with Key Predictor Variables

Cardiovascular Risk Assessment	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Race (ref: White NH)	0.94***	0.93***	0.72***	0.86***	0.74***	0.73***
Black NH	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.11)
American Indian NH	1.43**	1.43***	1.33***	1.40***	1.35***	1.34***
Asian NH	(0.40)	(0.41)	(0.39)	(0.37)	(0.37)	(0.37)
Hispanic	-0.06	-0.01	0.01	0.06	0.04	0.04
Other NH	(0.27)	(0.28)	(0.25)	(0.21)	(0.21)	(0.21)
	0.16	0.22	0.18	0.18	0.16	0.16
	(0.13)	(0.13)	(0.13)	(0.12)	(0.13)	(0.12)
	-0.01	0.00	-0.02	0.06	-0.01	-0.03
	(0.27)	(0.21)	(0.21)	(0.21)	(0.21)	(0.20)

Citations

Balla, Sujana, Sofia Elena Gomez, and Fatima Rodriguez. 2020. "Disparities in Cardiovascular Care and Outcomes for Women From Racial/Ethnic Minority Backgrounds." *Current Treatment Options in Cardiovascular Medicine* 22(12):75. doi: 10.1007/s11936-020-00869-z.

Bundy, Joshua D., Hongyan Ning, Victor W. Zhong, Amanda E. Paluch, Donald M. Lloyd-Jones, John T. Wilkins, and Norrina B. Allen. 2020. "Cardiovascular Health Score and Lifetime Risk of Cardiovascular Disease: The Cardiovascular Lifetime Risk Pooling Project." *Circulation: Cardiovascular Quality and Outcomes* 13(7):e006450. doi: 10.1161/CIRCOUTCOMES.119.006450.

Chaddha, Ashish, Elizabeth A. Robinson, Eva Kline-Rogers, Tina Alexandris-Souphis, and Melvyn Rubenfire. 2016. "Mental Health and Cardiovascular Disease." *The American Journal of Medicine* 129(11):1145-48. doi: 10.1016/j.amjmed.2016.05.018.

Dougherty, Anne Hamilton. 2011. "Gender Balance in Cardiovascular Research." *Texas Heart Institute Journal* 38(2):148-50.

Gooding, Holly C., Courtney A. Brown, Anna C. Revette, Viola Vaccarino, Jingyi Liu, Sierra Patterson, Catherine Stamoelis, and Sarah D. De Ferranti. 2020. "Young Women's Perceptions of Heart Disease Risk." *Journal of Adolescent Health* 67(5):708-13. doi: 10.1016/j.jadohealth.2020.05.010.

House, James S., James M. Lepkowski, Ann M. Kinney, Richard P. Mero, Ronald C. Kessler, and A. Regula Herzog. 1994. "The Social Stratification of Aging and Health." *Journal of Health and Social Behavior* 35(3):213. doi: 10.2307/2137277.

Oberlander, Jonathan, Mara Buchbinder, Larry R. Churchill, Sue E. Estroff, Nancy M. P. King, Barry F. Saunders, Ronald P. Strauss, and Rebecca L. Walker, eds. 2020. "Understanding Associations between Race, Socioeconomic Status, and Health: Patterns and Prospects." Pp. 258-67 in *The Social Medicine Reader, Volume II, Third Edition*. Duke University Press.

Regitz-Zagrosek, Vera. 2012. "Sex and Gender Differences in Health: Science & Society Series on Sex and Science." *EMBO Reports* 13(7):596-603. doi: 10.1038/embo.2012.87.

Sobhani, Kimia, Diana K. Nieves Castro, Qin Fu, Roberta A. Gottlieb, Jennifer E. Van Eyk, and C. Noel Bairey Merz. 2018. "Sex Differences in Ischemic Heart Disease and Heart Failure Biomarkers." *Biology of Sex Differences* 9(1):43. doi: 10.1186/s13293-018-0201-y.

Williams, David R., and Valerie Purdie-Vaughns. 2016. "Needed Interventions to Reduce Racial/Ethnic Disparities in Health: Table 1." *Journal of Health Politics, Policy and Law* 41(4):627-51. doi: 10.1215/03616878-3620857.