

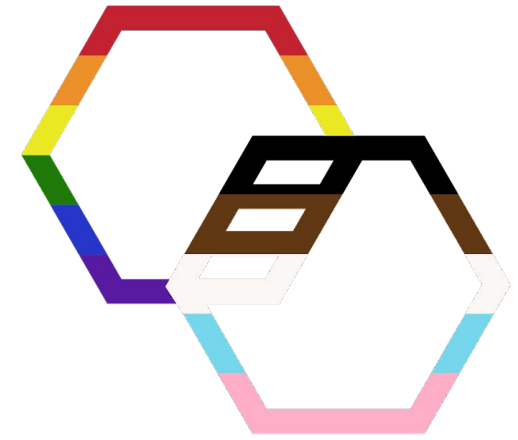
Self-Collection of Blood For Biomarkers of Aging in a Sample of Older Sexual and Gender Minority Adults – VUSNAPS BioAge Pilot

Lauren Gaydos, Assistant Professor, Sociology, UT Austin

with Audrey Kelly, KJ Davidson-Turner, Amanda Nelsen, Matthew Farina, Bharat Thyagarajan, and Tara McKay

April 12, 2023

NIA Biomarker Network Annual Meeting



VUSNAPS
B I O A G E S T U D Y



The University of Texas at Austin
Center on Aging and
Population Sciences
College of Liberal Arts



VANDERBILT
UNIVERSITY
**LGBT
POLICY LAB**



LGBT Aging



- 2.5 – 4 million older SGM adults in US (will double by 2030)
- 35% of SGM adults live in the US South
- Higher burden of stress exposure (particularly minority stress)
- More likely to be socially isolated (associated with poor health and aging outcomes generally)
- Worse health but often self-reported
- Discrimination and mistreatment from biomedical community

VUSNAPS – Main Study Design

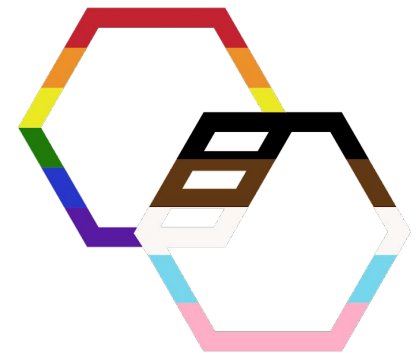
- 4 states in the US South with varying degrees of LGBT policy friendliness
 - Alabama
 - Georgia
 - North Carolina
 - Tennessee
- LGBTQ-identifying older adults aged 50-76
- Wave 1 (2020): n=1252
- Wave 2 (2022): n=1062
- Wave 3 (2024): planned



R01AG063771

VUSNAPS– BioAge Study Design

- Self-collection of biological specimens:
 - Wave 1: buccal swabs for DNA methylation (n=531)
 - Wave 2: blood samples for aging markers (pilot n=160)
 - Collected May – October 2022
 - Selected based on Wave 1 buccal swab participation
 - 9 biomarkers of aging identified by Targeting Aging with Metformin Workgroup
 - Inflammation (TNF- α receptor I, CRP, IL-6)
 - Stress response (GDF15)
 - Nutrient signaling (insulin, IGF1)
 - Kidney function (cystatin C)
 - Cardiovascular health (NT-proBNP)
 - Metabolism (hbA1c)



VUSNAPS
B I O A G E S T U D Y

P30AG066614

VUSNAPS – BioAge Study – blood collection protocol

- Email with interest form – 313/515 (**61%**)
- Contact for firm commitment – 216/313 (**69%**)
- Send kit – 189/216 (**88%**)
- Collection appointment
 - Phone or video
 - Consent
 - Collection using Tasso+ device
 - Survey
- Successful collection – 159/189 (**84%**)
- Laboratory assay – 151/159 (**95%**)
 - Good correspondence with venous blood in lab comparisons
- Incentives - COVID-19 antibody results and \$50 Gift card

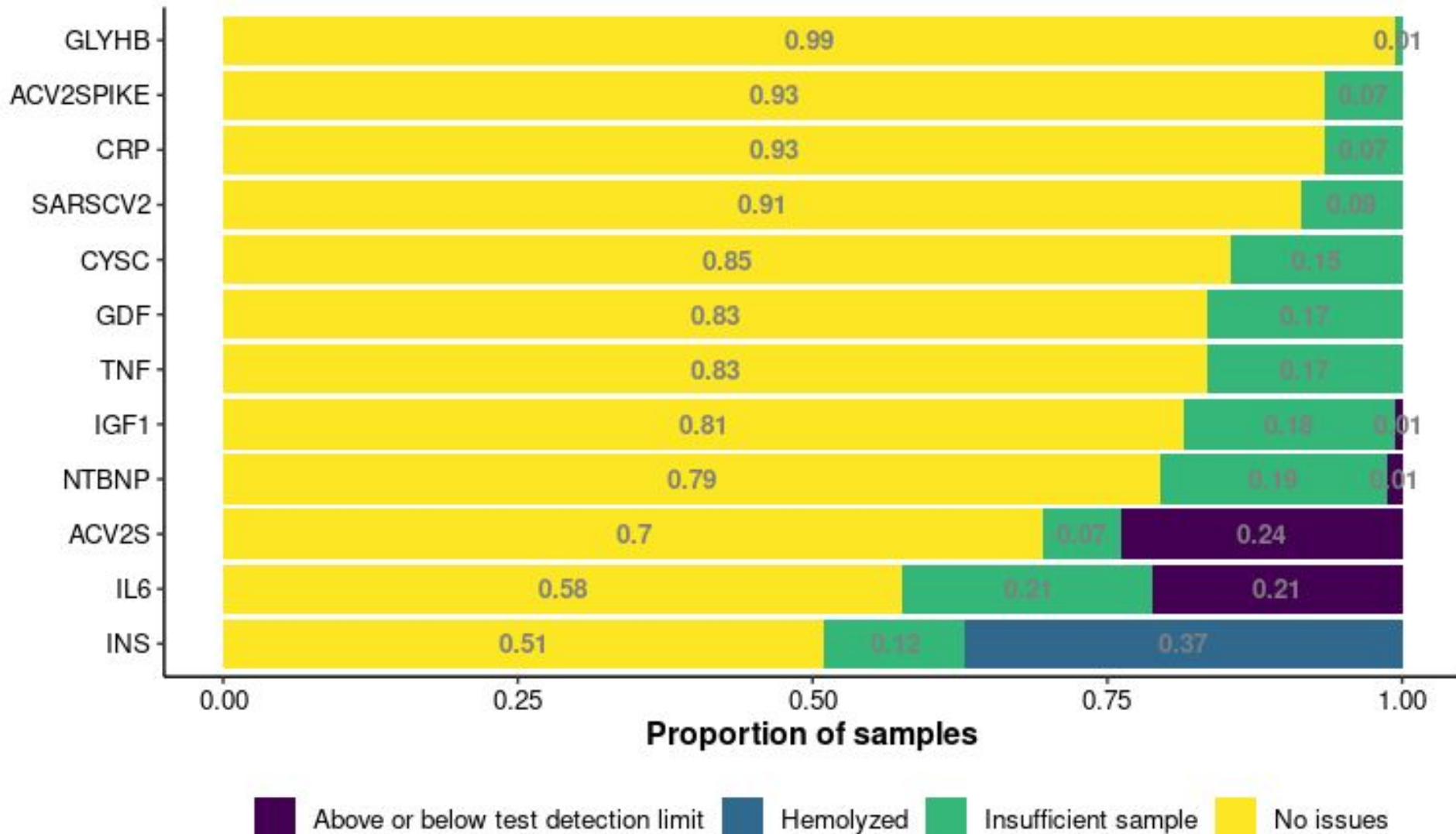


Device performance

- 225 devices shipped to 189 participants
- 50 device failures (**22%**)
 - 12 individuals with 2 failed attempts
 - 5 with 1 failed attempt and no subsequent attempt
 - 21 with 1 failed attempt and subsequent successful attempt
- 13 kits never returned
- 8 user errors 😊
- 151 final sample size



Sample coverage across assays



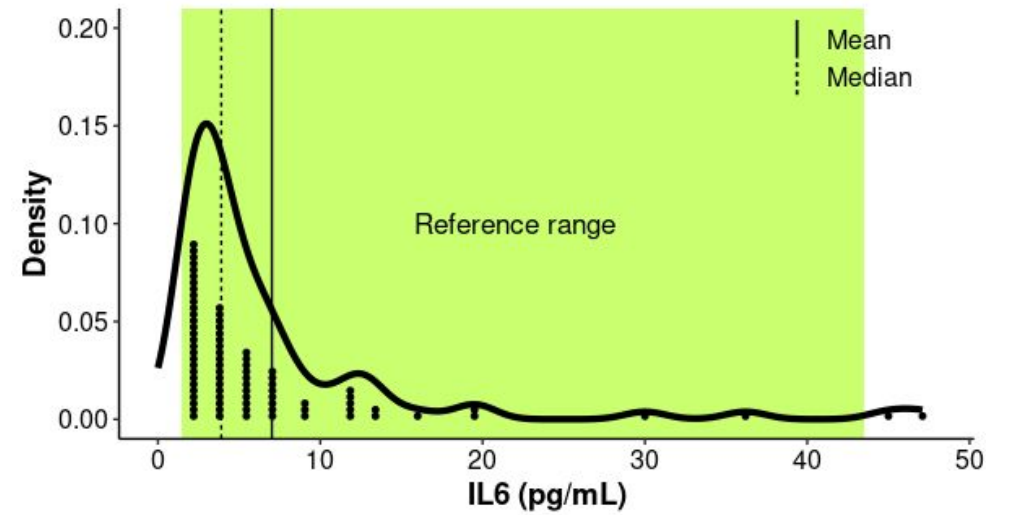
Laboratory run order:

1. SARSCV2 & ACV2SPIKE
2. CRP, insulin, Cyst-C, NTBNP, IGF1, HbA1c
3. IL6, TNF, GDF15

Inflammation

Interleukin 6

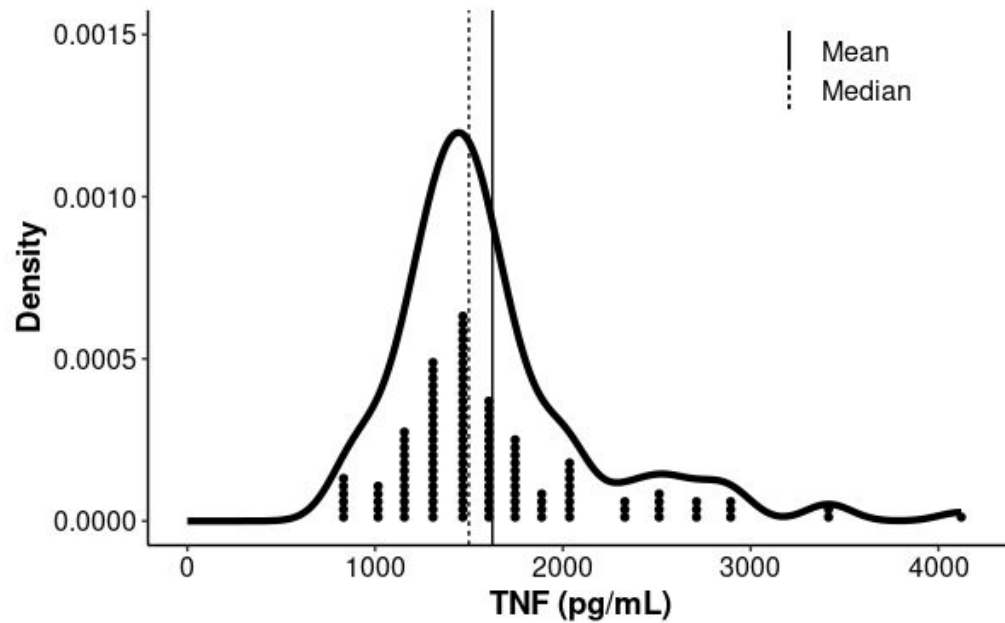
N = 82



Excludes 32 samples below test detection limit of 1.5 pg/mL.
For ease of visualization, 5 outliers above 100 pg/mL (138, 215, 305, 2505, and 8588 pg/mL) are excluded from view, but are included in mean and median.

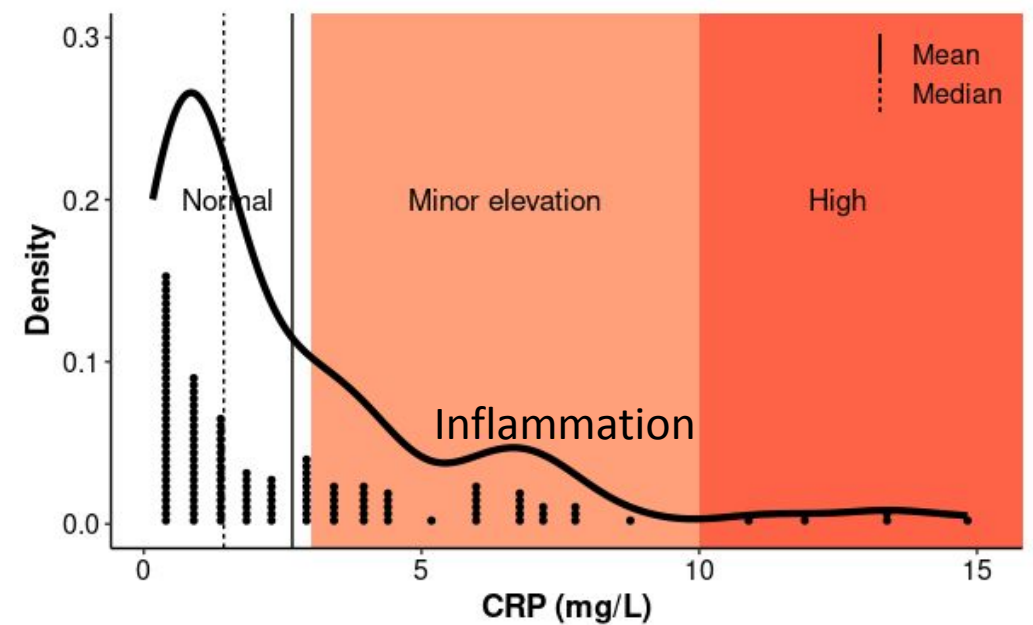
Tissue necrosis factor alpha

N = 126



C-reactive protein

N = 141



Nutrient signaling and metabolic function

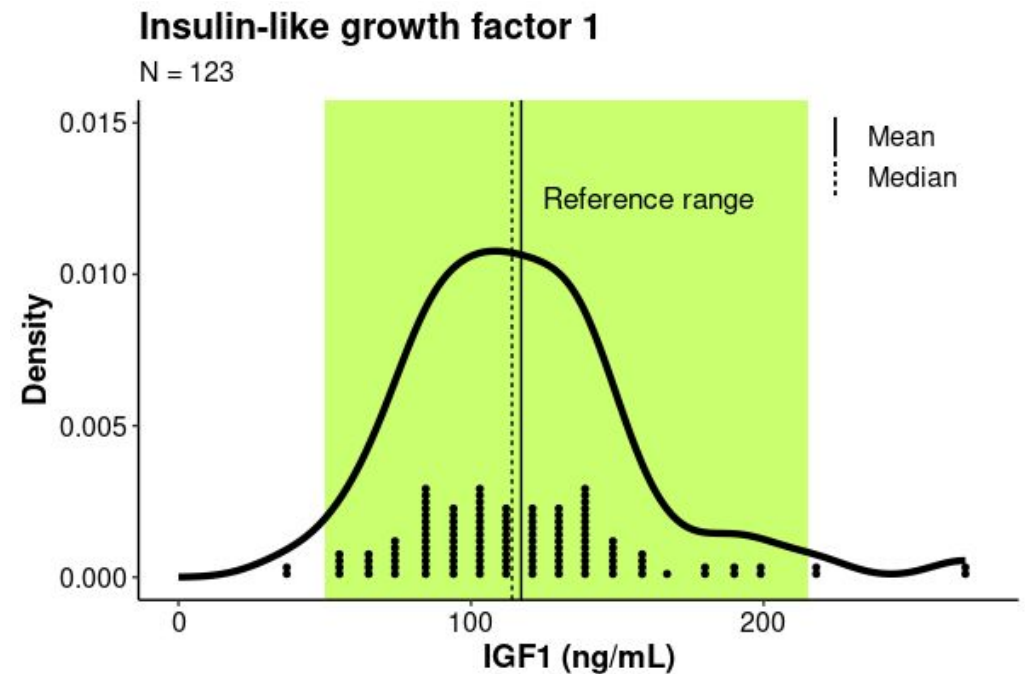
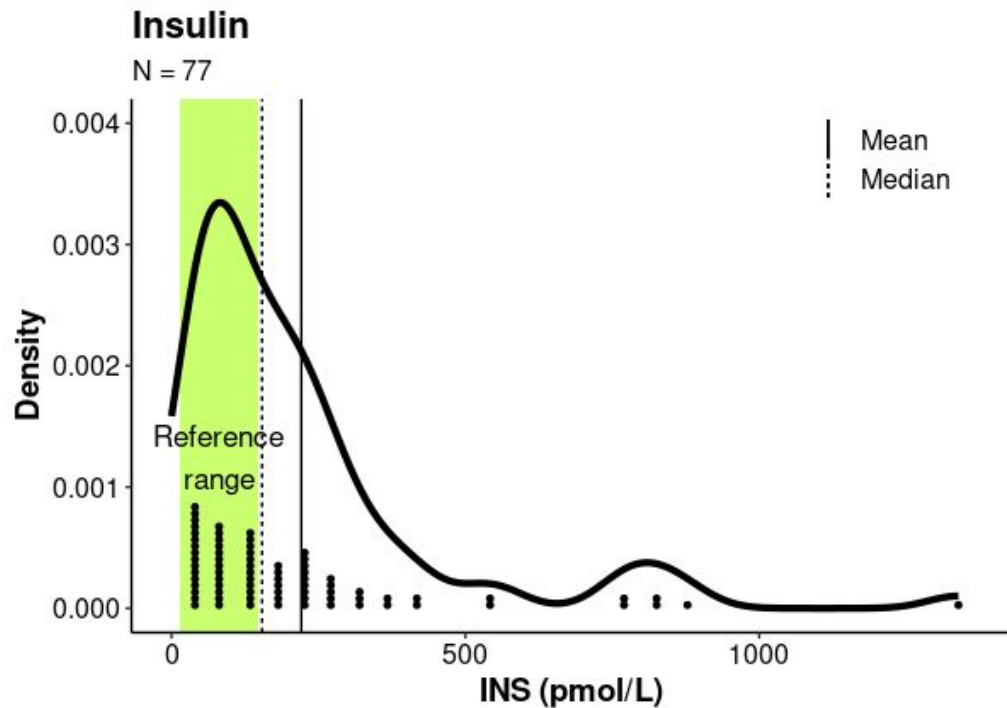
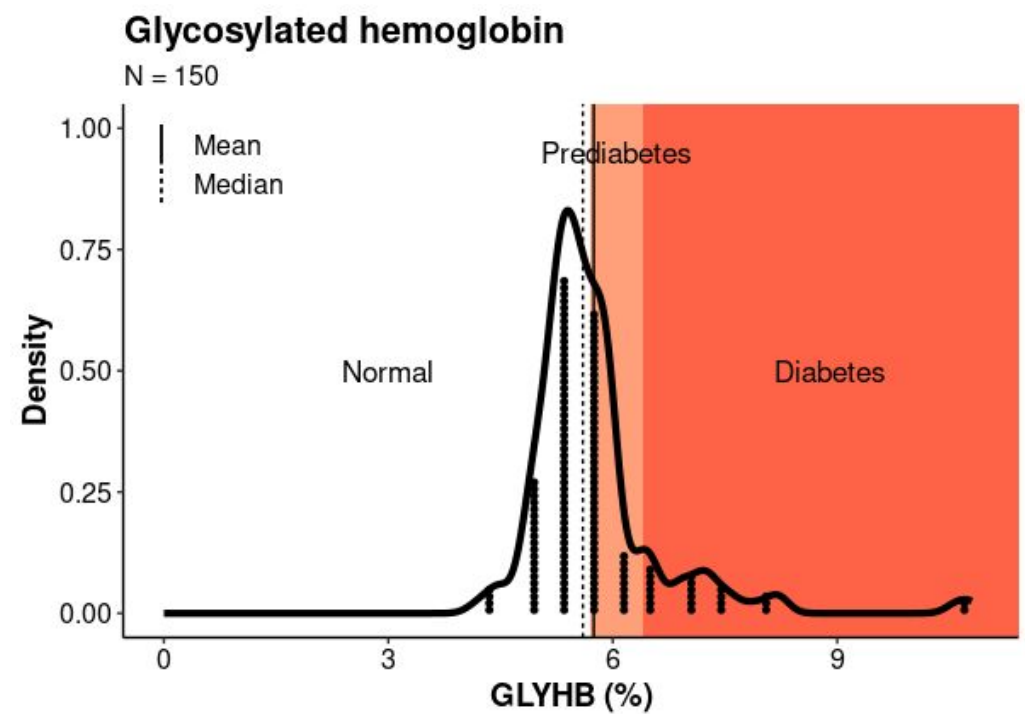
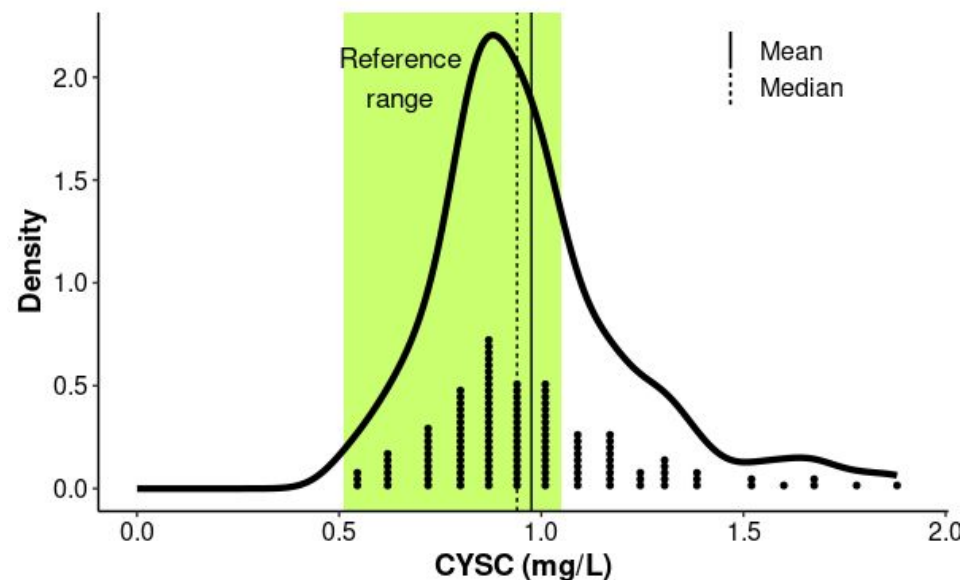


Figure excludes one sample below test detection limit of 7ng/mL

Stress response, cardiovascular, and kidney function

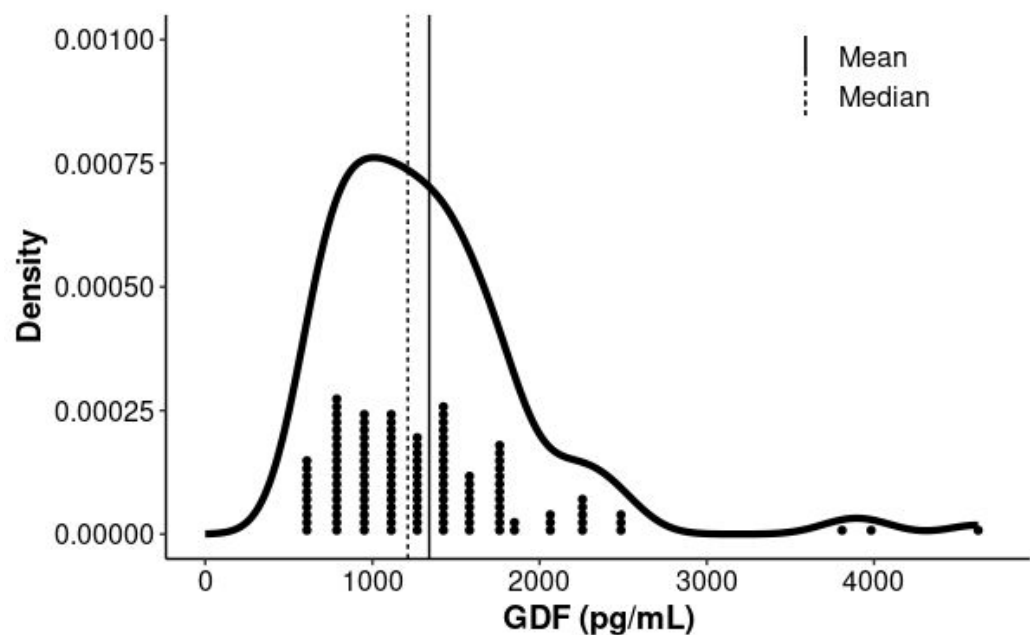
Cystatin C

N = 129



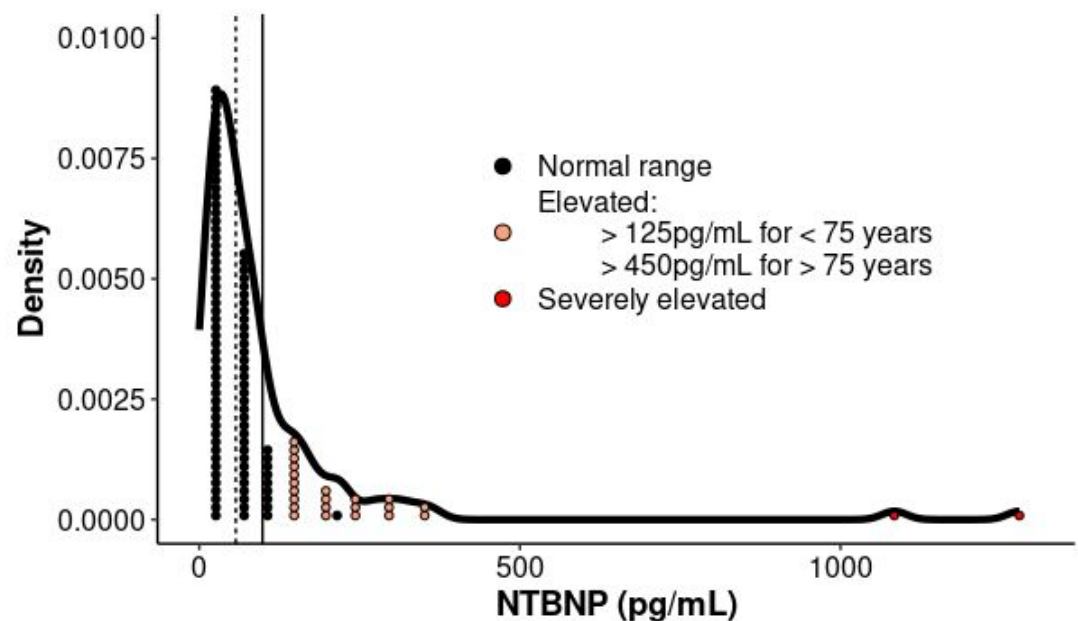
Growth differentiation factor 15

N = 126



NT-proBNP

N = 120



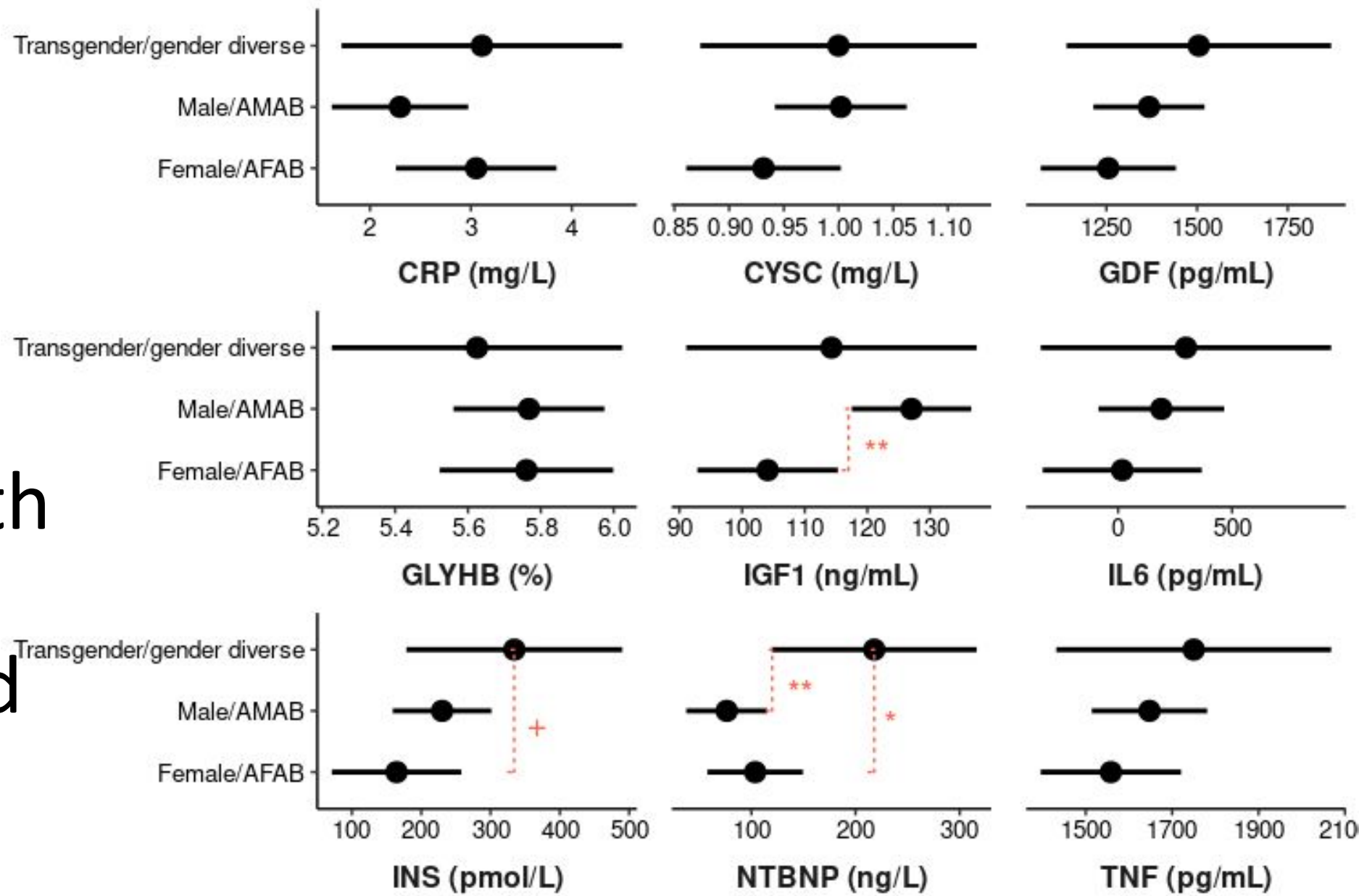
Excludes two samples with values below test detection limit of 5 pg/mL

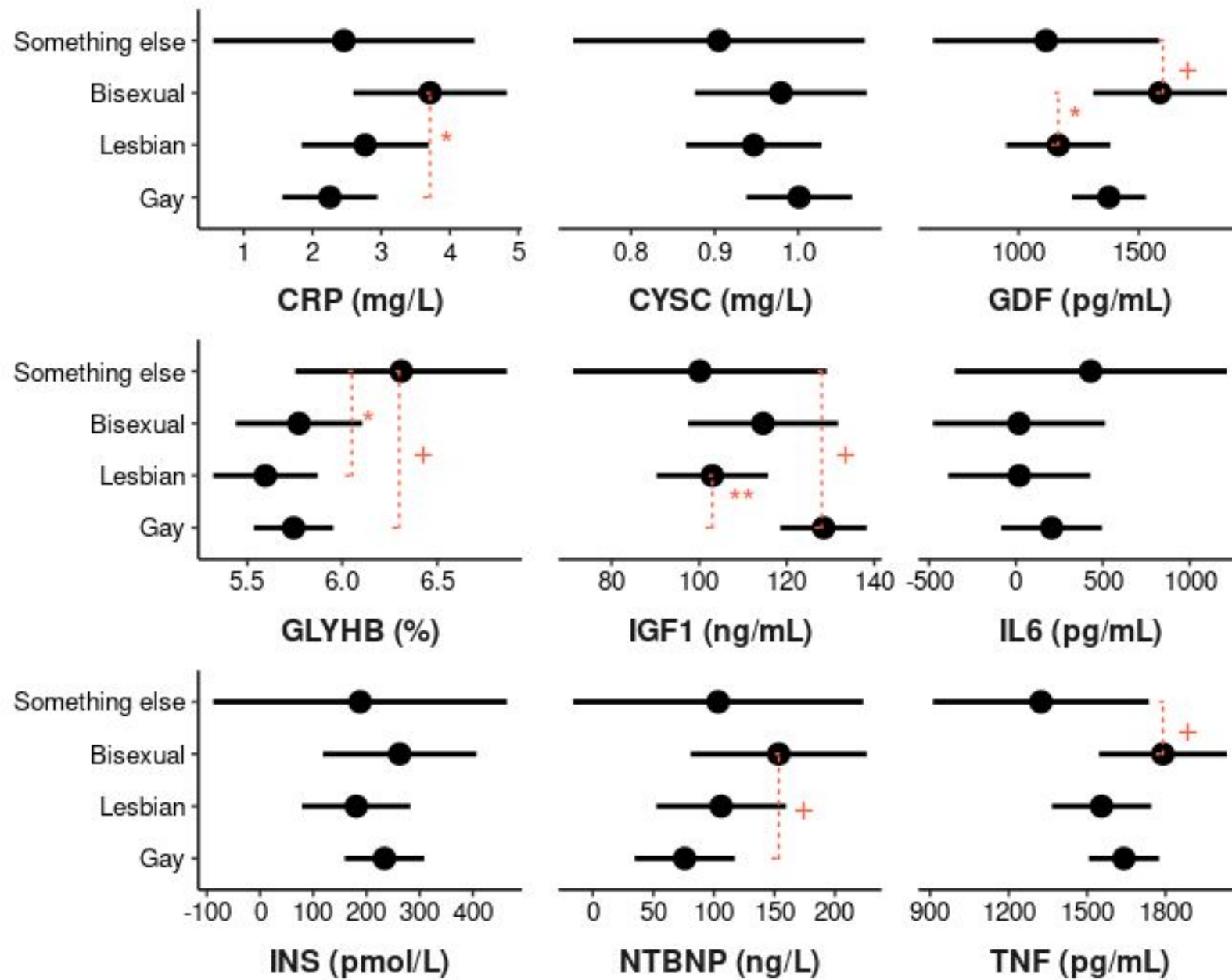
Sample characteristics – more diverse than main sample

	Covariate	N	Percent in BioAge pilot (n=151)	Percent in buccal sample (n=551)	Percent in VUSNAPS Wave 1 (n=1252)
Gender identity	Female/AFAB	57	0.38	0.34	0.37
	Male/AMAB	74	0.49	0.60	0.54
	Transgender/gender diverse	20	0.13	0.07	0.09
Sexual orientation	Bisexual	28	0.19	0.12	0.11
	Gay	71	0.47	0.57	0.53
	Lesbian	42	0.28	0.28	0.32
	Something else	10	0.07	0.03	0.04
Race/Ethnicity	Hispanic	3	0.02	0.02	0.01
	NH Asian	2	0.01	0.004	0.004
	NH Black	13	0.09	0.05	0.08
	NH White	126	0.83	0.89	0.87
	Other/Multiracial	7	0.05	0.04	0.03
State at recruitment	Alabama	28	0.19	0.20	0.19
	Georgia	31	0.21	0.23	0.22
	North Carolina	37	0.25	0.24	0.29
	Tennessee	55	0.36	0.33	0.30
Education	Less than bachelors	36	0.24	0.27	0.29
	Bachelors	45	0.30	0.33	0.32

Gender differences in IGF1, INS, and NTBNP

Consistent with female advantage and transgender disadvantage





Differences by sexual orientation in GDF, GLYCHB, IGF1, NTBNP, and TNF

Consistent with bisexual disadvantage

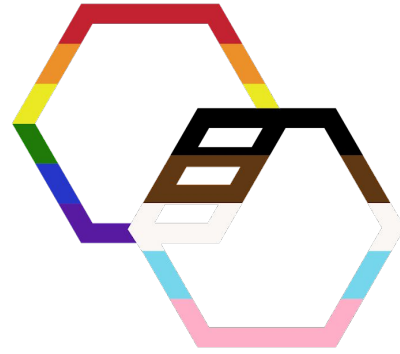
Would I recommend self-collection with Tasso?

Pros

- Good interest and high participation and consent
- No evidence of differential participation
- Ease of use
- In-home convenience
- Promising variation and patterning by SOGI
- Cost?

Cons

- Challenges with device failure ~22%
- Variations in yield (<100 uL manufacturer failure threshold, expected average 300 uL, maximum 500 uL); full coverage of our panel on ~70% (excluding hemolysis)
- ~40% hemolysis



VUSNAPS

B I O A G E S T U D Y

WWW.VUSNAPS.COM

lauren.gaydosh@austin.utexas.edu