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**Authors**

Chiu, Mark  
Wiegley, Nasim  
Huang, Yihung  
et al.

**Publication Date**

2021

**Data Availability**

The data associated with this publication are not available for this reason: N/A



# Glomerular Filtration Rate (GFR) Measurement by Iohexol Plasma Clearance in an Ethnically Diverse Living Donor Population

Mark Chiu; Nasim Wiegley<sup>1</sup> MD; Yihung Huang<sup>2</sup> MD; Ling-Xin Chen<sup>2</sup> MD

<sup>1</sup> Division of Nephrology, <sup>2</sup> Section of Transplant Nephrology, University of California, Davis School of Medicine



## BACKGROUND

- An accurate determination of Glomerular Filtration Rate (GFR) is essential in the evaluation of living kidney donors.
- The gold standard measurement of GFR is urinary clearance of inulin, which is a cumbersome and difficult testing process.
- Iohexol is a non-ionic contrast agent with low extrarenal excretion, tubular secretion or reabsorption, and protein binding affinity, and is therefore a good agent for measurement of GFR (mGFR).
- Iohexol has also been found to be virtually non-toxic, with low cost and can yield mGFR with one timed blood draw.

## OBJECTIVES

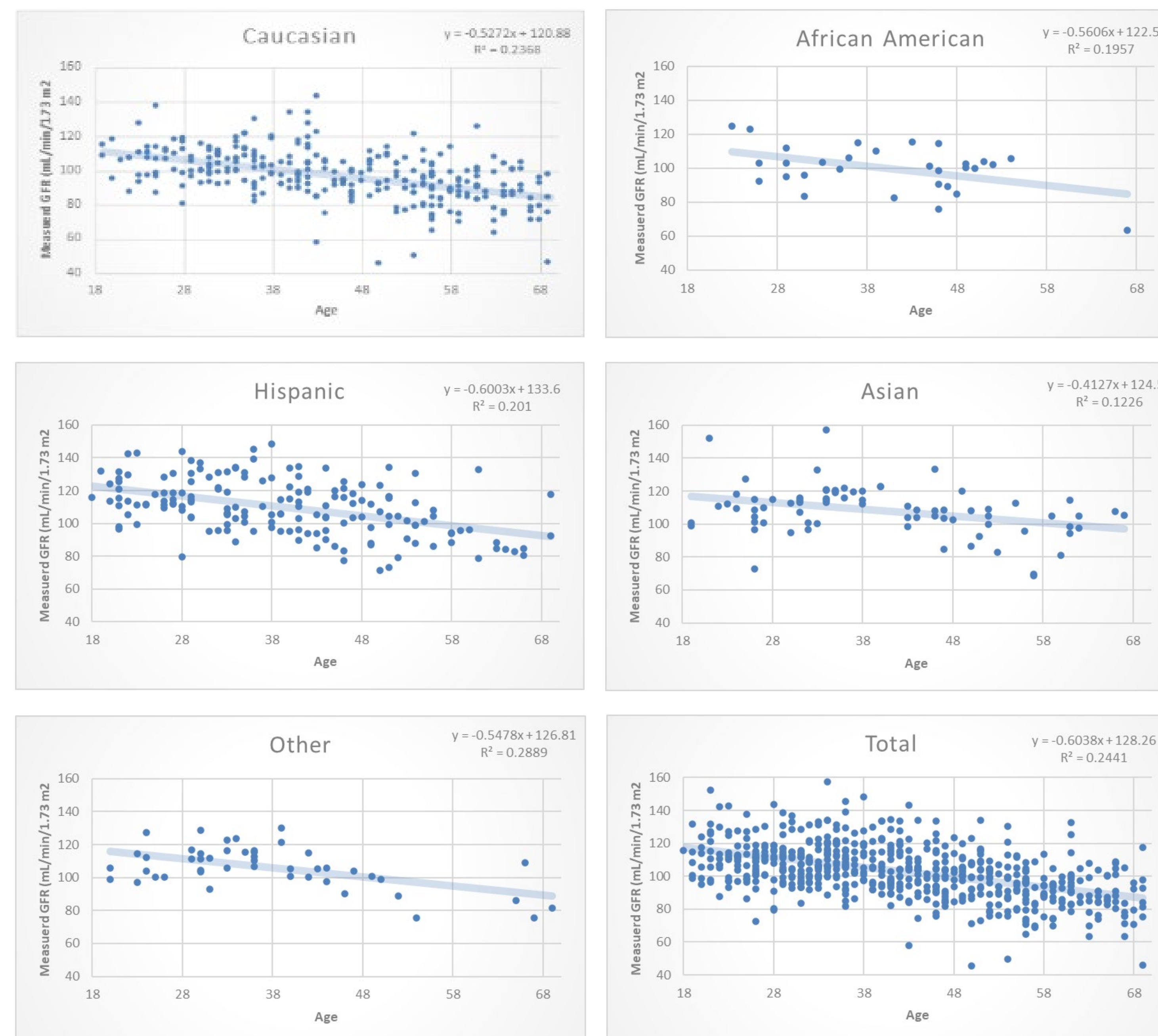
- To analyze and evaluate GFR as measured by plasma clearance of iohexol in living kidney donor candidates.
- To compare mGFR by iohexol clearance with serum creatinine-based GFR estimations, as well as historically reported norms.
- To investigate the association between GFR with demographic characteristics such as age, gender, and ethnicity.

## METHODS

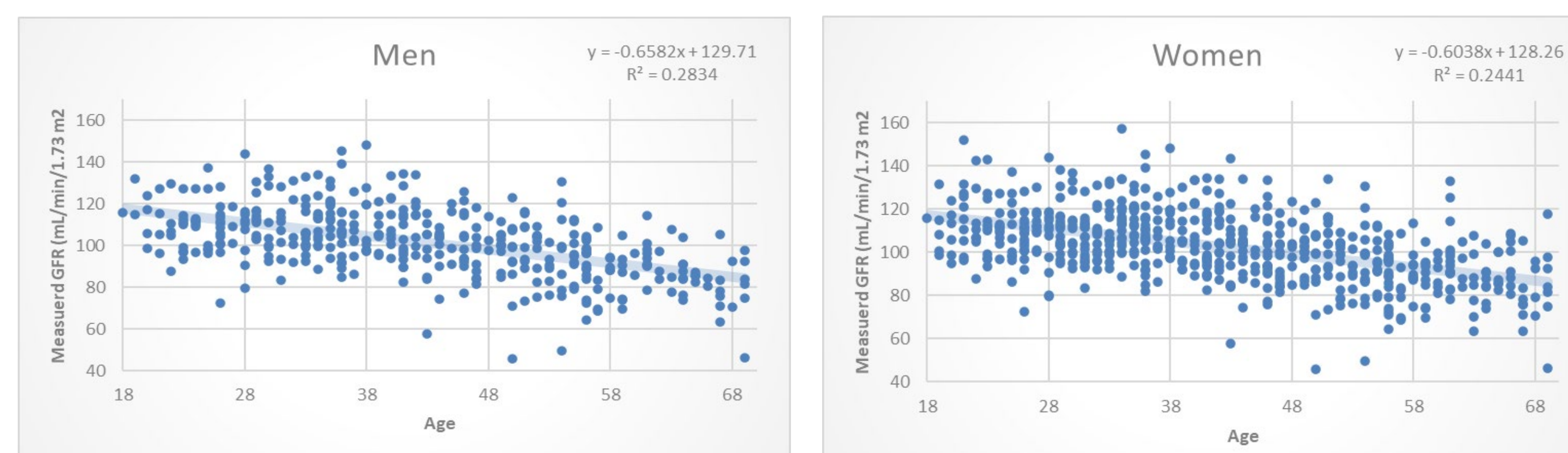
- All potential living donors who underwent GFR measurement by iohexol plasma clearance at our center between 10/2016 – 6/2020 were included.
- We retrospectively reviewed the medical records to collect information about donors' age, BMI, ethnicity, and sCr to calculate eGFR by CKD-EPI and MDRD.
- Linear regression analysis was performed for comparison of mGFR values by ethnicity, sex, age, and BMI, as well as to compare mGFR and eGFR values.

## RESULTS

- 607 potential living donors were evaluated. 35% were men and the mean age was 44 (range 19-69).
- Racial distribution: 47% Caucasian, 27% Hispanic, 13% Asian, 5% Black.



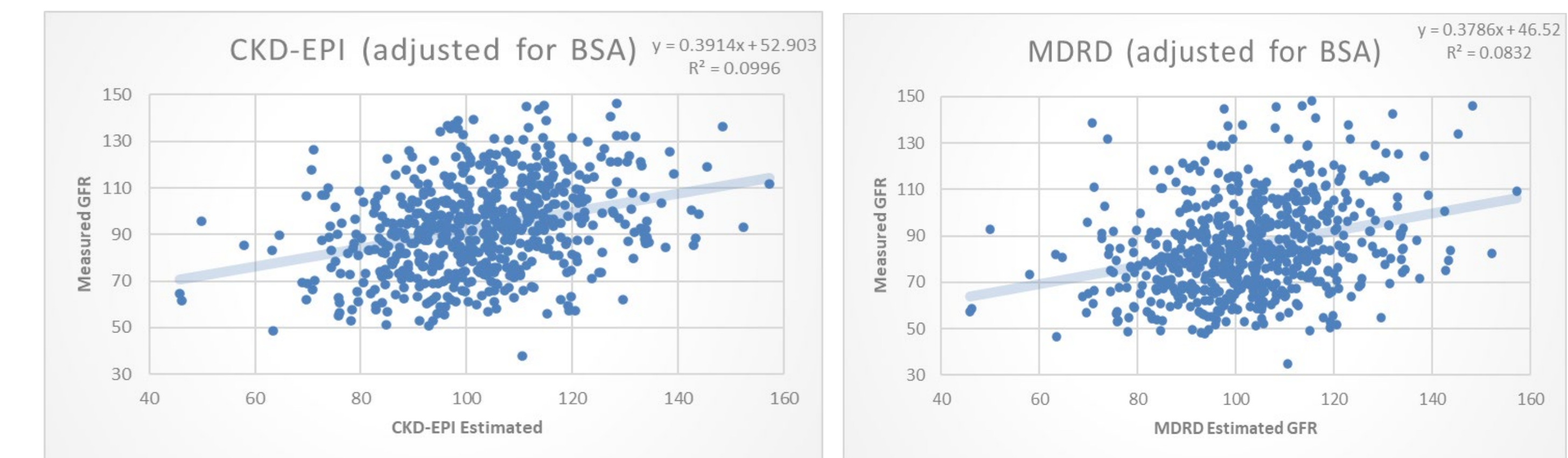
**Figure 1.** Median mGFR was 100 ml/min/1.73m<sup>2</sup> for Total. Median mGFR was higher for Hispanics (111 ml/min/1.73m<sup>2</sup>), Asians (109 ml/min/1.73m<sup>2</sup>) and African Americans (102 ml/min/1.73m<sup>2</sup>) compared to Caucasians (97 ml/min/1.73m<sup>2</sup>).



**Figure 2.** Men > 50 years of age had faster mGFR decline than women the same age.

## RESULTS

- eGFR by CKD-EPI had a closer correlation with mGFR than eGFR by MDRD [Figure 3].
- CKD-EPI underestimated GFR for Hispanics when compared with Caucasians. (6.3 mL/min for each 1 mL/min).
- MDRD underestimated GFR for Hispanics (by 6.9 mL/min) and Asians (by 5.3 mL/min) compared to Caucasians.



**Figure 3.** CKD-EPI slope = 0.39, R<sup>2</sup> = 0.09. MDRD slope = 0.38, R<sup>2</sup> = 0.08.

## CONCLUSIONS

- Hispanic and Asian ethnicities had higher mGFR compared to Caucasians in our potential living donor population, which is an important finding that requires further delineation.
- The CKD-EPI calculator is a better estimate of true measured GFR than the MDRD calculator.
- Ethnicity may be an effect modifier of the relationship between calculated and measured GFR based on prior work, but this needs to be tested in a larger population.

## REFERENCES

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