

## Background

Primeros Pasos is a primary care clinic in rural Quetzaltenango, Guatemala that provides health care to 15,000 indigenous Mayans and Guatemalans living in 10 communities within the Palajunjo valley.

Due to limited resources the clinic has struggled to maintain patient health records as subsequently demonstrate has been unable to measure and demonstrate its impact on the health outcomes of surrounding community members.

## Hypothesis

- 1) That the use of the data collection tool REDCap can improve the completeness, accuracy, and comparability of patient health data collected compared to a paper-based record system (COEX). At little to no cost.
- 2) That a REDCap based system will improve overall system usability and provide basic clinical support features to medical providers through the use of ‘data piping’ and branching logic.

## Objectives

To evaluate the utility and accuracy of the current medical records system and assess the capability for research.

To identify areas for improvement and provide solutions to the mmedical record system.

## Methods

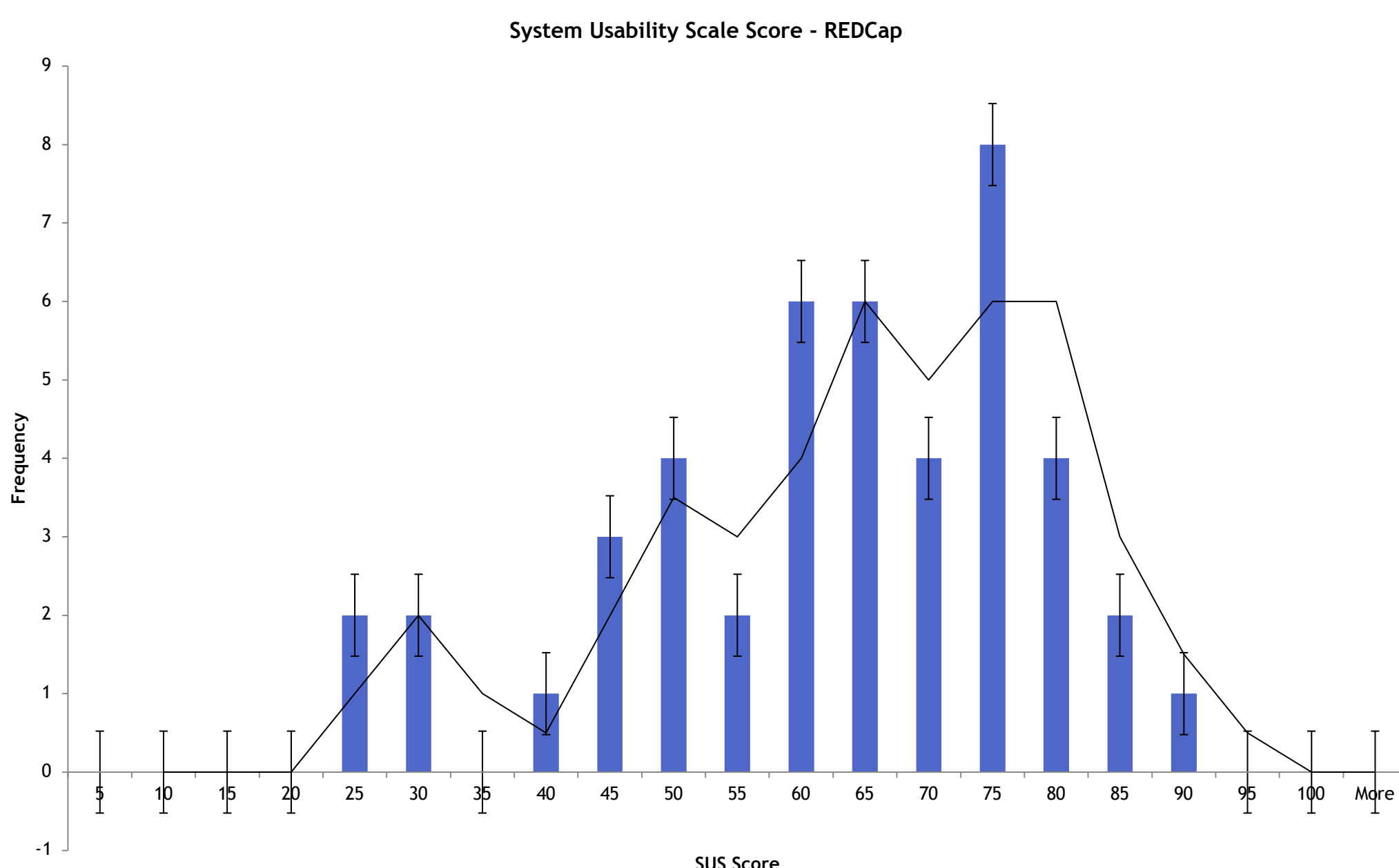
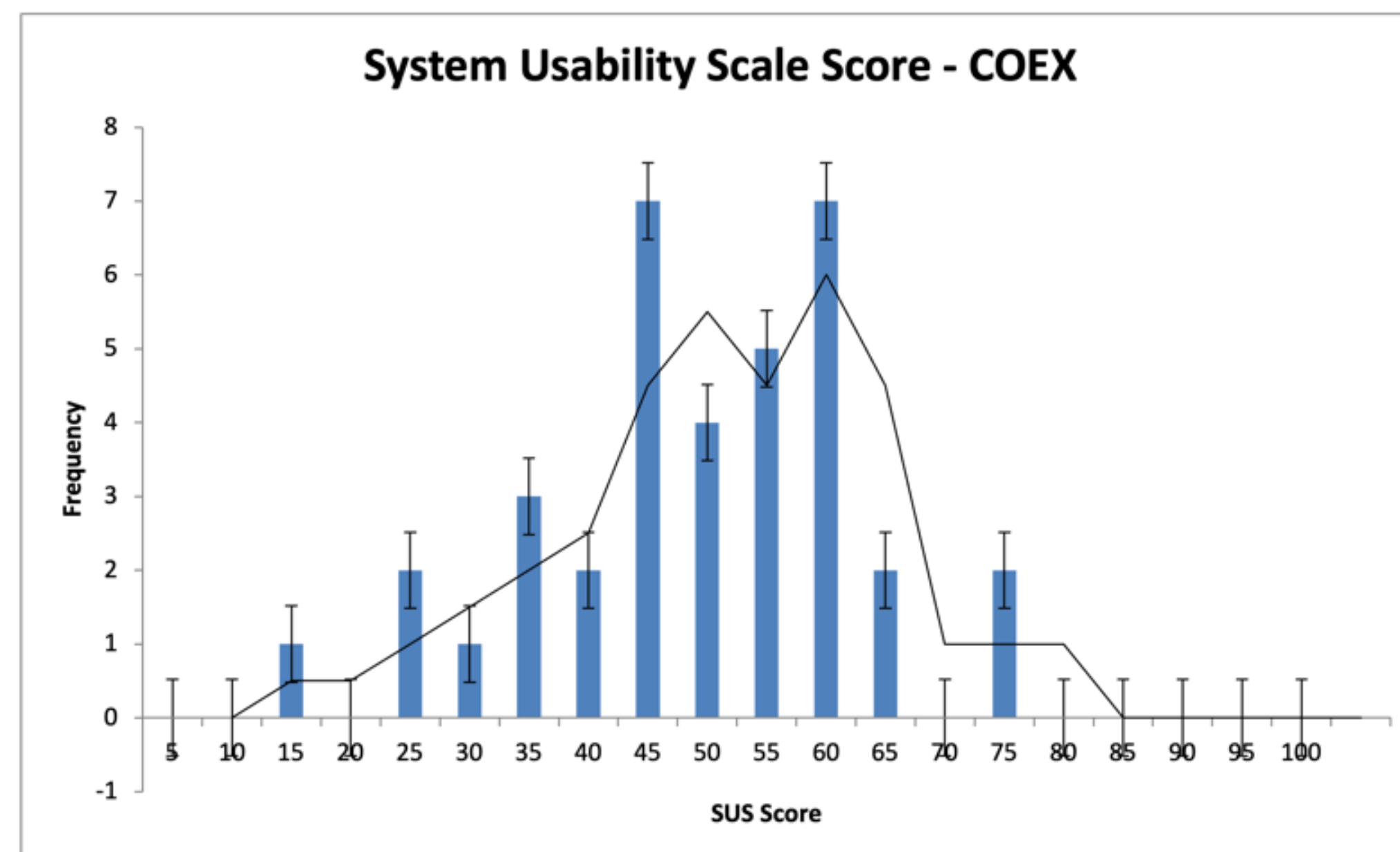
Subjective analysis of the ‘usability’ of a REDCap-based medical record system compared to a paper and excel based record system using the System Usability Scale.

SUS provided to clinic staff and medical students via anonymous surveys to compare the two systems.

An objective analysis of the data consistency, correctness, and comparability to Guatemalan census data.

## Results

### System Usability Score Comparisons



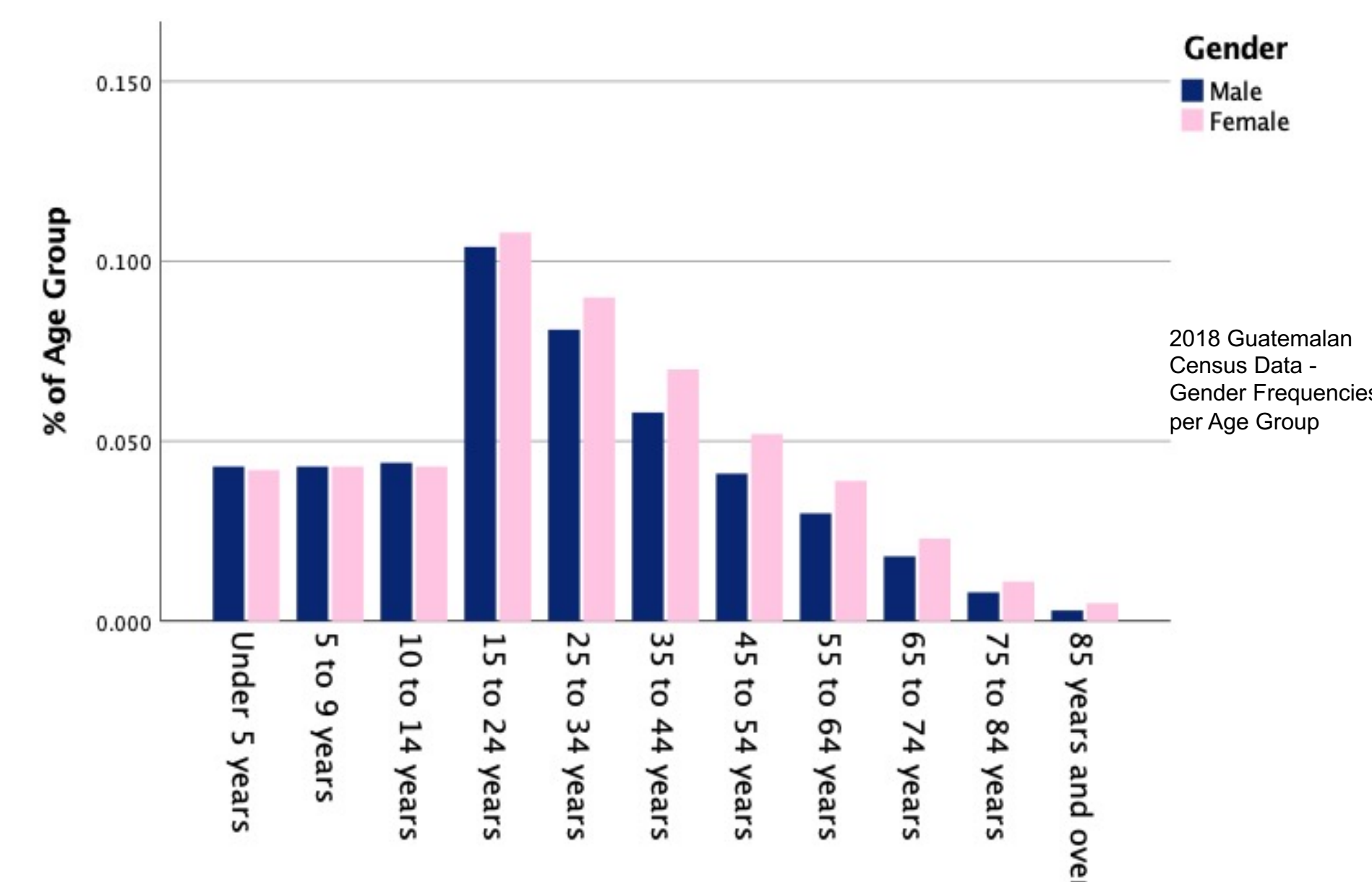
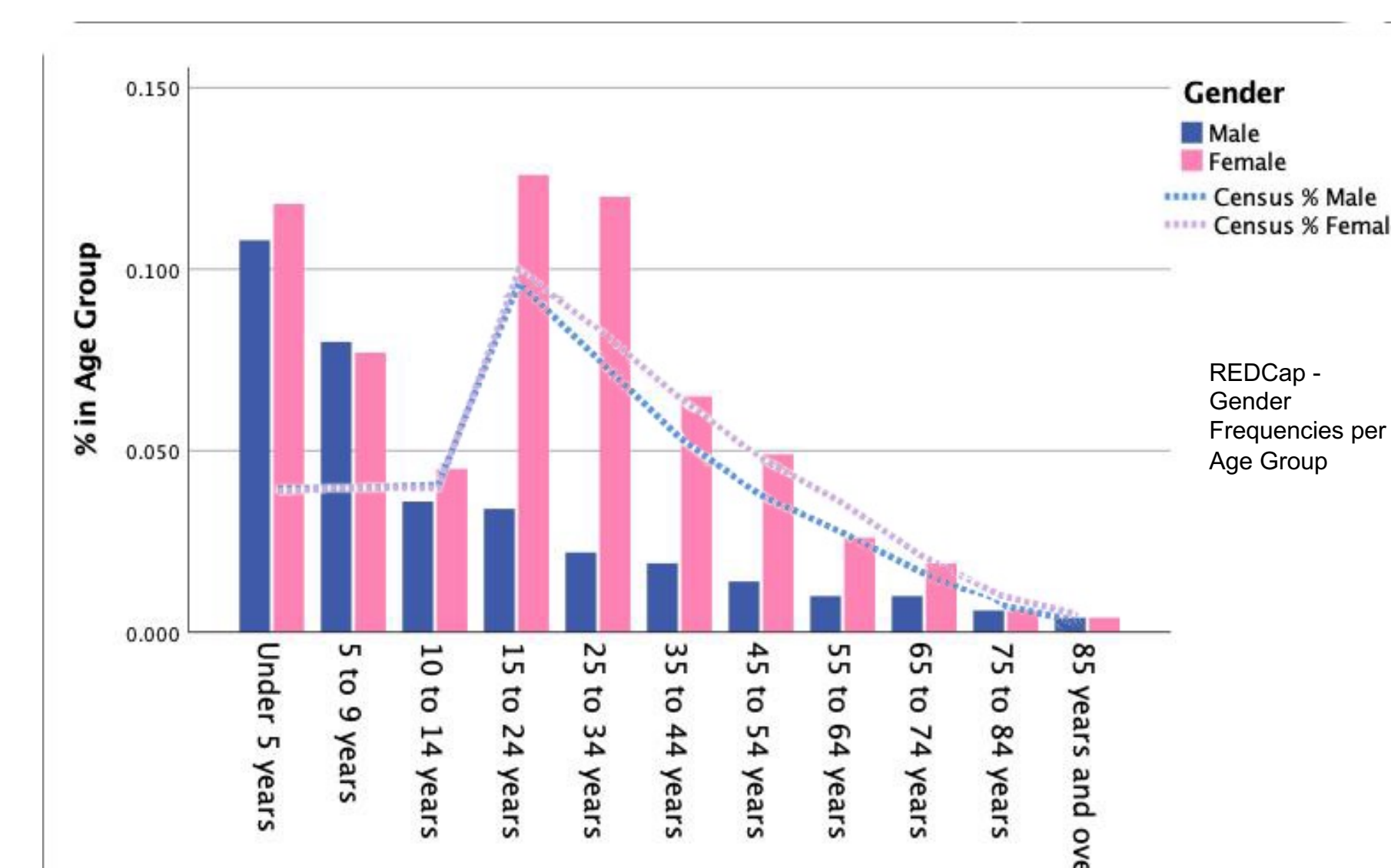
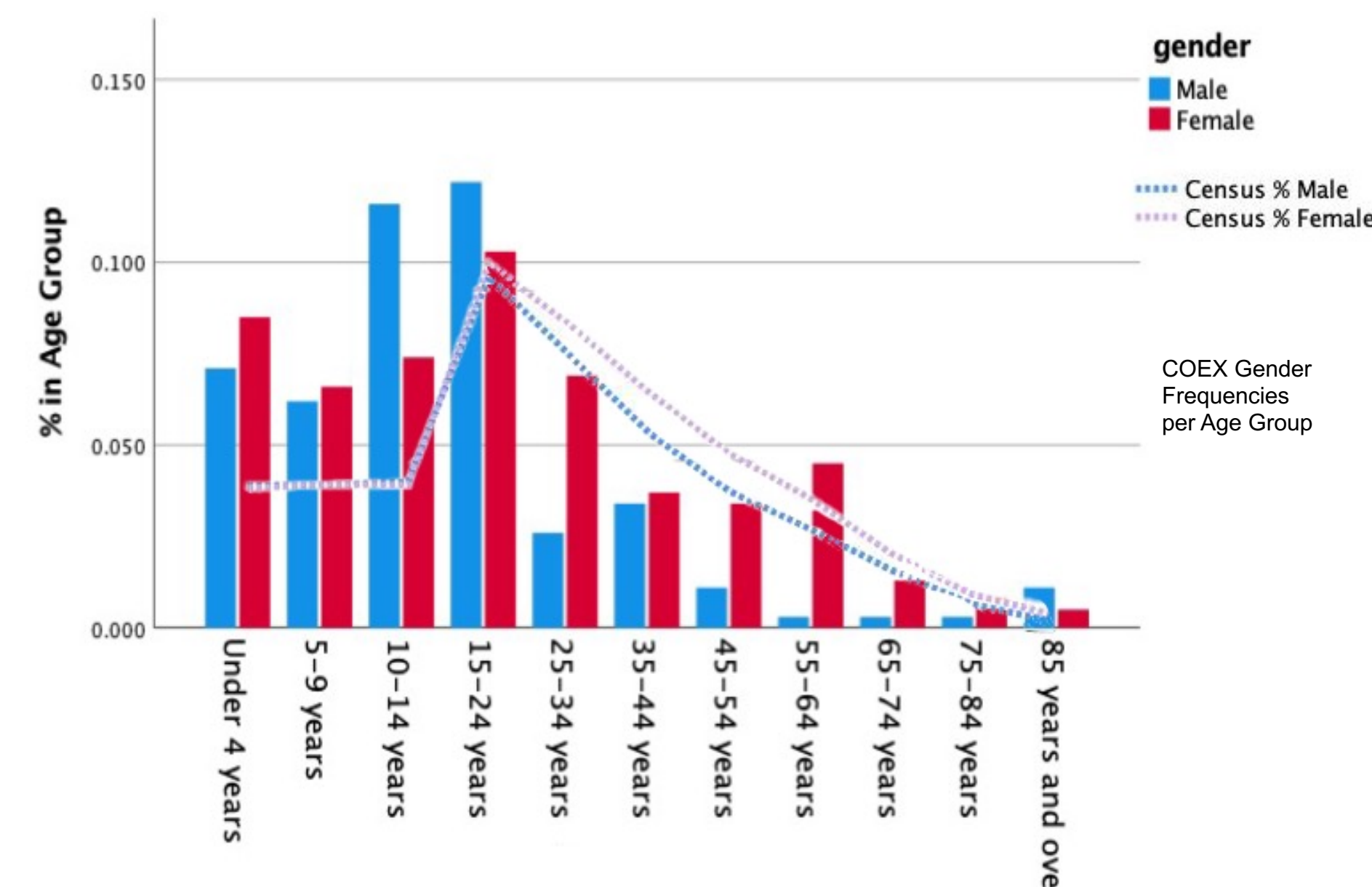
### REDCap System Sensitivity and PPV for 3 Test Conditions

Hypertension	Pts w/ HTN Dx	Pts w/ BP > 140/90	Pts w/ BP <140/90	58 1892	Sens = 0.51 Spec= 0.99 PPV= 0.77 NPV= 0.88
	Pts w/o HTN Dx	45	13		
		43	1839		
		88	1852		
Obesity	Pts w/ Obesity Dx	Pts w/ BMI ≥30	Pts w/ BMI <30	0 2738	Sens 0.277 Spec 0.99 PPV 0 NPV 0.86
	Pts w/o Obesity Dx	0	0		
		360	2378		
		360	2378		
Malnourished/Anorexia	Pts w/ Malnourished Dx	Pts w/ BMI ≤18.5	Pts w/ BMI >18.5	3 0 1928	Sens 0.0045 Spec 1 PPV 0 NPV 1
	Pts w/o Malnourished Dx	656	1363		
		659	1363		
		659	1363		

### Primeros Pasos’ Patient Archives (before)



### REDCap Dataset Comparability to 2018 Guatemalan Census Data



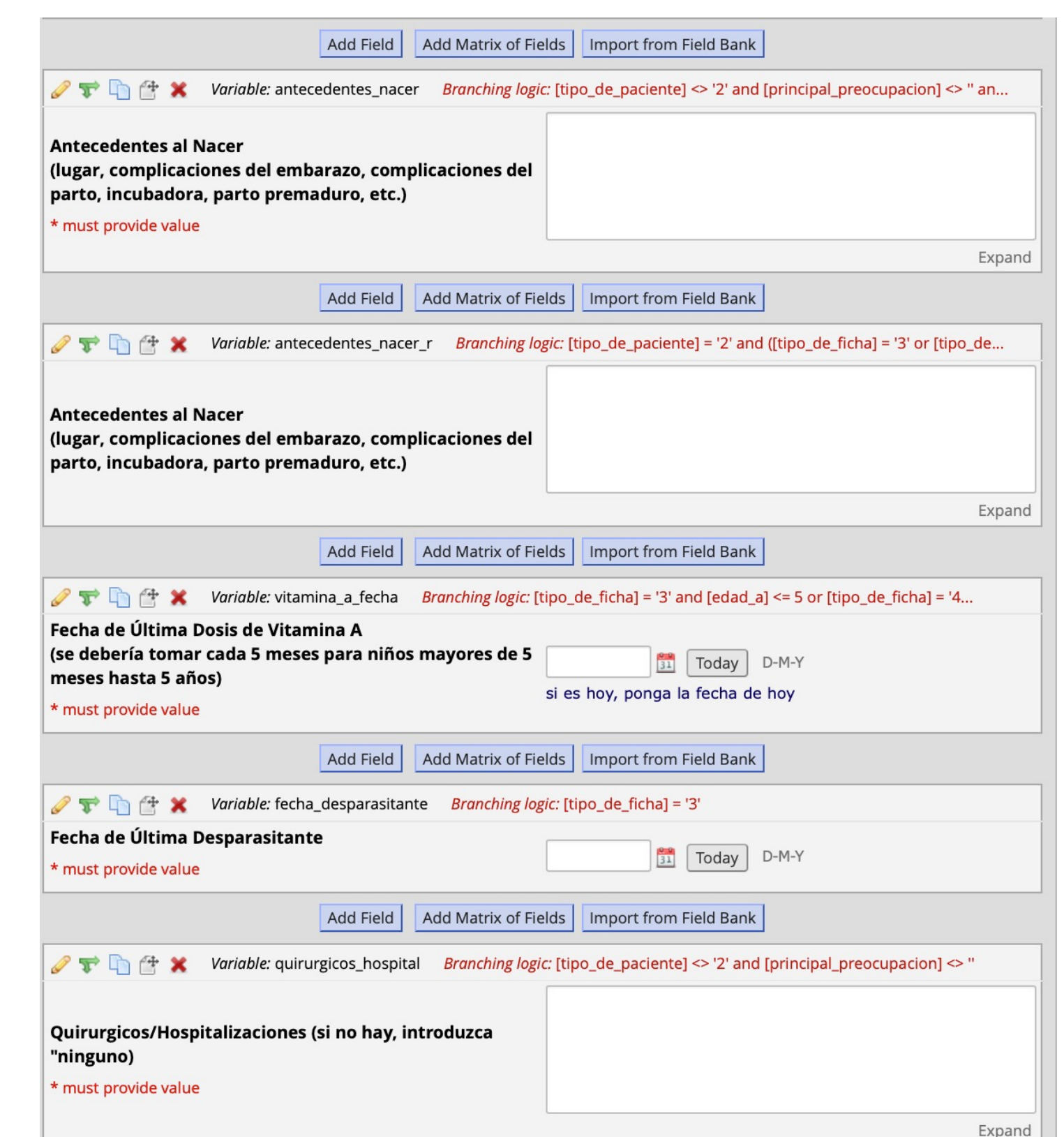
### Primeros Pasos’ Patient Archives (after)



A REDCap-based EHR was rated by clinic staff to have a higher System Usability Score (55) above the previous paper and excel-based system COEX (48). Both SUS are low compared to injustry standards for electronic systems but higher than the average SUS score for EHRs (45).

A REDCap based EHR allowed for the collection of reliable and more complete healthcare data compared to the previous system and captured patient data that is comparable to results from the 2018 Guatemalan census (p<.001).

Features such as ‘piping data’ from one form to another and branching logic to prevent skipping important medical questions were not enough to produce a system that functioned as a clinical support tool. The system has extremely low sensitivity for 3 test conditions. Use of EHR as a standalone EHR does not support providers in making clinic decision making but does provide more retrievable and accurate patient information that takes less time to record and less time to evaluate.



Example of a data collection tool and the associated branching logic

## Acknowledgements

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