

Comparison of Diabetes Treatments Mary's Center Clinic March 2013 to July 2013

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Background

- ▶ **Type 2 Diabetes Mellitus (T2DM)**
 - ▶ **Prevalence: 25.8 million in US**
 - ▶ **18.8 million diagnosed, 7.0 million undiagnosed**
 - ▶ **Prediabetes: est. 79 million**
 - ▶ **Diabetes 7th leading cause of death**



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Background

- ▶ **Mary's Center**
 - ▶ What is Mary's Center?
 - ▶ Diabetes care
- ▶ **DRC program intro**
 - ▶ Diabetes Rotational Clinic (DRC)
 - ▶ Standard Treatment (ST)



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Objectives

- ▶ Assess T2DM outcomes and patient T2DM biomarkers
- ▶ Compare DRC vs ST
 - ▶ Group characteristics
- ▶ Form T2DM treatment recommendations



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Methods

- ▶ Clinical data set compiled
- ▶ Data organization, variable creation
- ▶ Clinical data analyzed for all T2DM, and then by groups: DRC and ST
- ▶ Chi-square, Student's T-test, ANCOVA and Logistic Regression analyses performed using SAS 9.3



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Results: Overall Demographic

- ▶ **Sample size: 1664 diabetic patients**
 - ▶ 6/2010 through 12/2012
 - ▶ 1471 ST (88.4%), 193 DRC (11.6%)
- ▶ **Majority Spanish-speaking**
 - ▶ 73.94% Spanish only, 19.38% English only, 0.91% Spanish and English, 5.77% Other language
- ▶ **Majority females ages 18 to 44**
 - ▶ 75.06% female, 24.94% male
 - ▶ 42.94% female ages 18 to 44



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Results: Chi-Square Test

Predictor	p-value
Language	0.9078
Gender	0.164
Age Group	<0.0001
Blood Pressure	0.2482
HgA1C	0.0019
Cholesterol Category	0.2141
HDL Category	0.4104
LDL Category	0.586
Triglyceride Category	0.0804
Starting BMI	0.4511
Ending BMI	0.1731
Change in BMI	<0.0001



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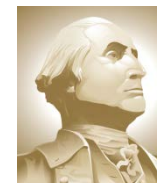
Results: Chi-Square Test

Table of DRC_YN by AGEGROUP

DRC_YN(DRC program participant?)	AGEGROUP(Patient Age Group)				Total
	Under 18	18 to 44	45 to 64	65+	
No	9	771	554	137	1471
	0.56	47.77	34.32	8.49	91.14
	0.61	52.41	37.66	9.31	
Yes	0	37	85	21	143
	0	2.29	5.27	1.3	8.86
	0	25.87	59.44	14.69	
Total	9	808	639	158	1614
	0.56	50.06	39.59	9.79	100



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Results: Chi-Square Test

DRC_YN(DRC program participant?)	A1C(A1C Category)			Total
	Below 5.7	5.7 to 6.4: Prediabetes	6.5+: Diabetes	
No	76	194	623	893
	7.06	18.03	57.9	82.99
	8.51	21.72	69.76	
Yes	2	45	136	183
	0.19	4.18	12.64	17.01
	1.09	24.59	74.32	
Total	78	239	759	1076
	7.25	22.21	70.54	100



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Results: Chi-Square Test

Table of DRC_YN by CBMI

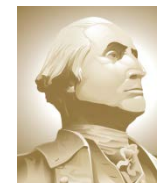
DRC_YN(DRC

CBMI(BMI Change Category)

program participant?)	Decreased	No change	Increased	Missing data	Total
No	552 33.17 37.53	27 1.62 1.84	636 38.22 43.24	256 15.38 17.4	1471 88.4
Yes	96 5.77 49.74	2 0.12 1.04	95 5.71 49.22	0 0 0	193 11.6
Total	648 38.94	29 1.74	731 43.93	256 15.38	1664 100



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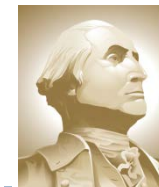
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Results by A1C breakdown (1 of 2)

Table of DRC_YN by A1C_PHYS											
DRC_YN(DRC)	A1C_PHYS(A1C Category Secondary Analysis)										
program participant?)	Below 6.5	6.5 to 7.4	7.5 to 8.4	8.5 to 9.4	9.5 to 10.4	10.5 to 11.4	11.5 to 12.4	12.5 to 13.4	13.5 to 14.4	14.5+	Total
No	270	256	109	73	58	50	32	18	14	13	893
	25.1	23.8	10.1	6.78	5.39	4.65	2.97	1.67	1.3	1.21	82.99
	30.2	28.7	12.2	8.17	6.49	5.6	3.58	2.02	1.57	1.46	
Yes	47	46	28	19	10	13	10	4	5	1	183
	4.37	4.28	2.6	1.77	0.93	1.21	0.93	0.37	0.46	0.09	17.01
	25.7	25.1	15.3	10.4	5.46	7.1	5.46	2.19	2.73	0.55	
Total	317	302	137	92	68	63	42	22	19	14	1076
	29.5	28.1	12.7	8.55	6.32	5.86	3.9	2.04	1.77	1.3	100

Frequency Missing = 588



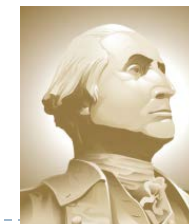
Results by A1C breakdown (2 of 2)

Statistic	DF	Value	Prob
Chi-Square	9	8.123	0.522

Analysis Variable : HgA1C HgA1c				
Min	Max	N	Std Dev	Mean
0.06	16.1	1077	2.25	7.88



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Results: Student's T-test

Predictor	DRC	Mean	95% Confidence Limits of the Mean	p-value
Language	No	1.3889	(1.3487, 1.429)	0.5981
	Yes	1.3575	(1.2519, 1.4632)	
Gender	No	0.7559	(0.734, 0.7779)	0.1642
	Yes	0.7098	(0.6452, 0.7744)	
Age Group	No	2.5568	(2.5226, 2.5909)	<0.0001
	Yes	2.8881	(2.7841, 2.9921)	
Blood Pressure	No	1.8142	(1.7701, 1.8583)	0.0548
	Yes	1.9574	(1.8114, 2.1035)	
HgA1C	No	2.6125	(2.5706, 2.6545)	0.0035
	Yes	2.7322	(2.664, 2.8005)	
Cholesterol Category	No	1.5098	(1.4416, 1.578)	0.1302
	Yes	1.3692	(1.2079, 1.5306)	
HDL Category	No	1.7158	(1.6509, 1.7807)	0.7355
	Yes	1.746	(1.5653, 1.9268)	
LDL Category	No	1.9556	(1.8739, 2.0372)	0.3305
	Yes	1.8421	(1.6516, 2.0326)	
Triglyceride Category	No	2.0794	(2.0003, 2.1585)	0.4041
	Yes	1.9867	(1.7744, 2.1989)	
Starting BMI	No	3.7712	(3.6998, 3.8426)	0.3372
	Yes	3.8653	(3.6894, 4.0411)	
Ending BMI	No	3.8058	(3.7369, 3.8746)	0.3402
	Yes	3.8964	(3.7207, 4.072)	
Change in BMI	No	2.4052	(2.346, 2.4644)	<0.0001
	Yes	1.9948	(1.8532, 2.1364)	



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Results: Logistic Regression

Predictor	Odds Ratio	95% Confidence Intervals
Language	0.924	(0.753, 1.134)
Gender	0.763	(0.544, 1.069)
Age Group	1.372	(0.813, 2.315)
Blood Pressure	0.785	(0.518, 1.191)
HgA1C	2.049	(0.897, 4.679)
Cholesterol Category	0.408	(0.134, 1.245)
HDL Category	1.038	(0.596, 1.808)
LDL Category	1.58	(0.844, 2.958)
Triglyceride Category	0.825	(0.525, 1.295)
Starting BMI	1.282	(0.695, 2.495)
Ending BMI	0.972	(0.513, 1.841)
Change in BMI	1.282	(0.871, 1.885)



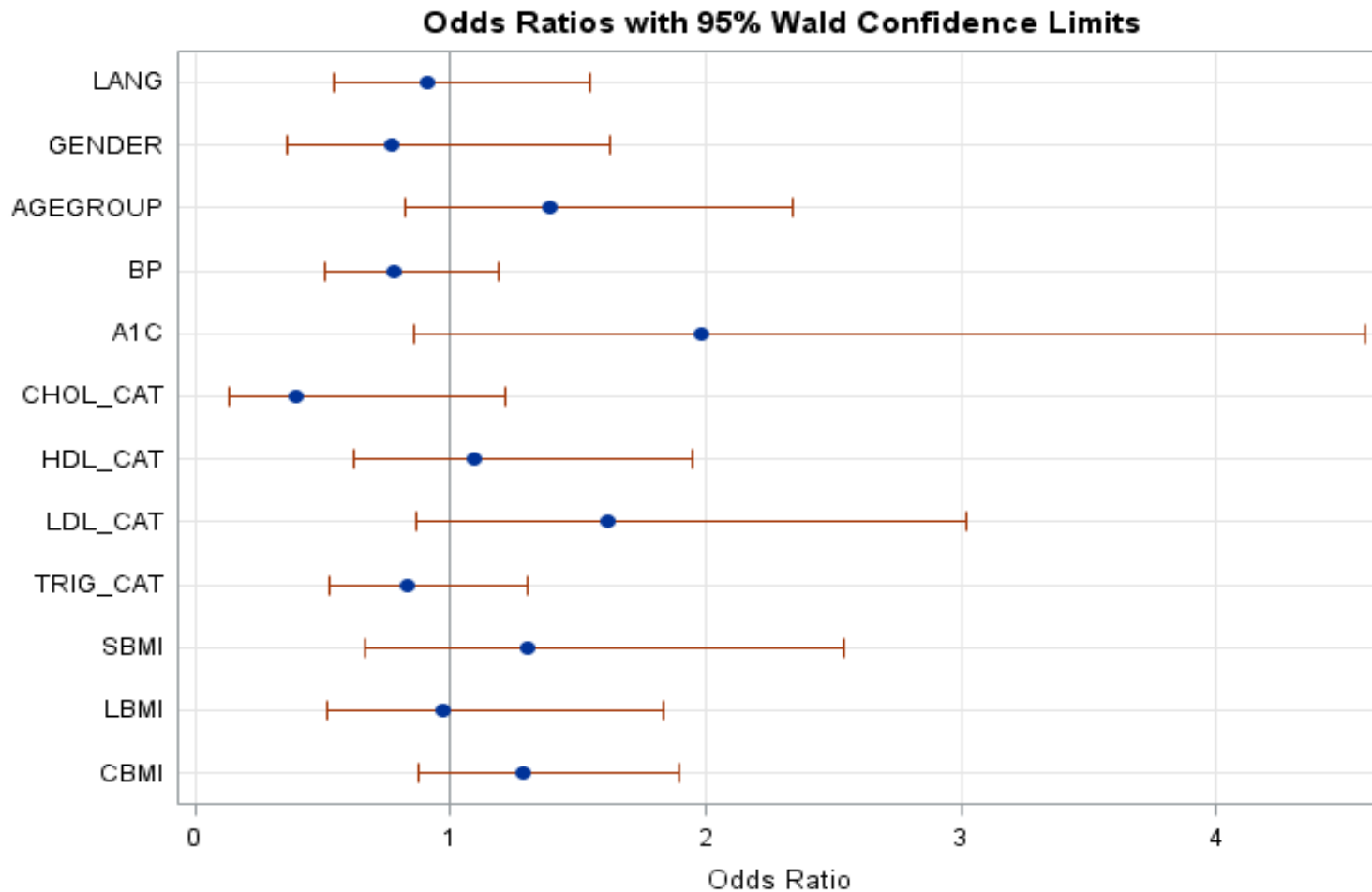
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Results: Logistic Regression



Results: Logistic Regression

Predictor	Odds Ratio	95% Confidence Intervals
Language	0.838	(0.645, 1.089)
Gender	0.977	(0.638, 1.496)
Age Group	1.514	(1.128, 2.033)
Blood Pressure	0.923	(0.732, 1.164)
HgA1C	2.406	(1.519, 3.811)
Starting BMI	0.789	(0.542, 1.147)
Ending BMI	1.27	(0.874, 1.844)
Change in BMI	1.017	(0.817, 1.266)



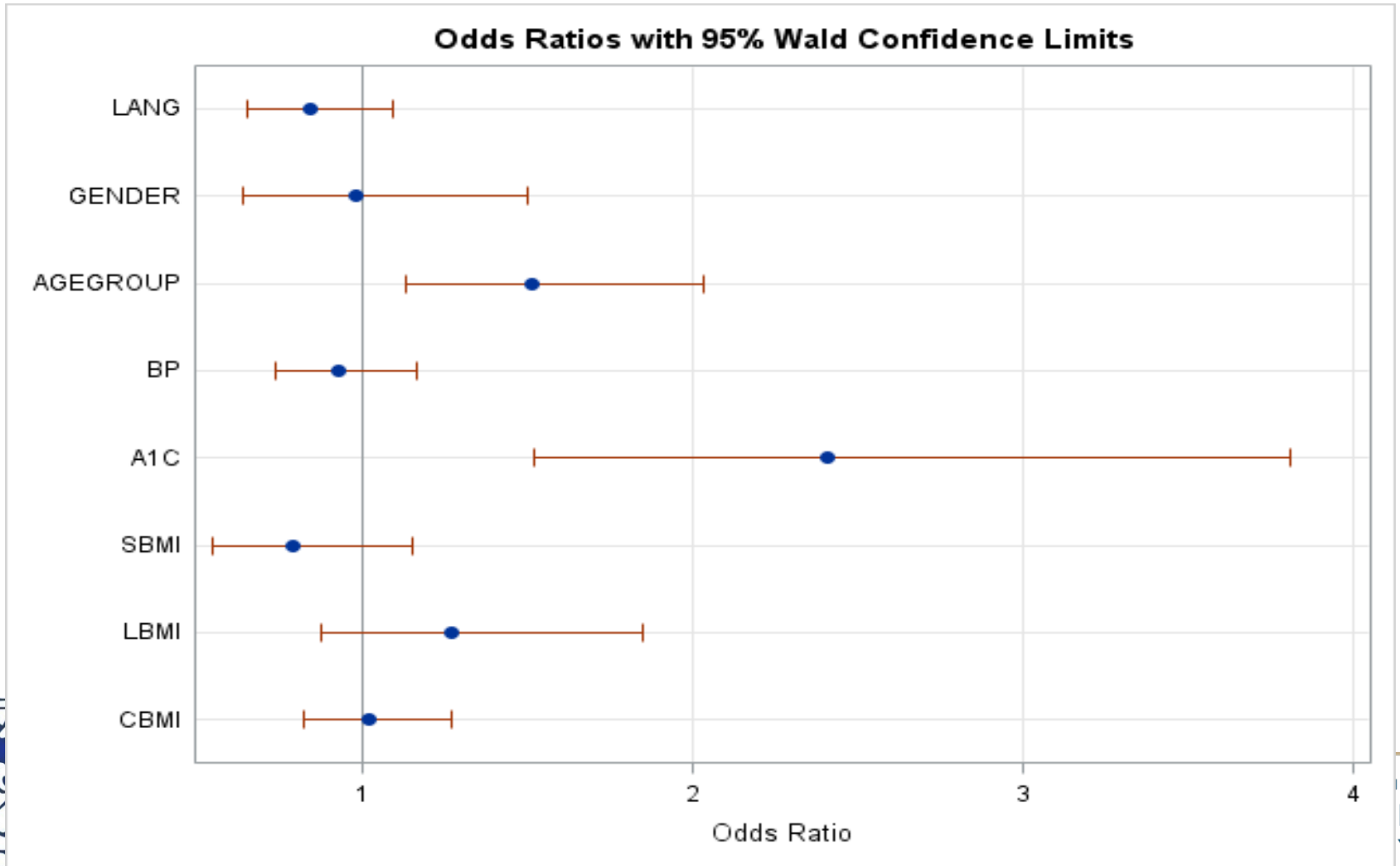
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Results: Logistic Regression



Results: Logistic Regression

Predictor	Odds Ratio	95% Confidence Intervals
Language	0.882	(0.688, 1.131)
Gender	0.809	(0.541, 1.211)
Age Group	2.028	(1.55, 2.653)
Blood Pressure	1.05	(0.84, 1.311)
Starting BMI	0.816	(0.578, 1.151)
Ending BMI	1.313	(0.927, 1.859)
Change in BMI	0.952	(0.772, 1.174)



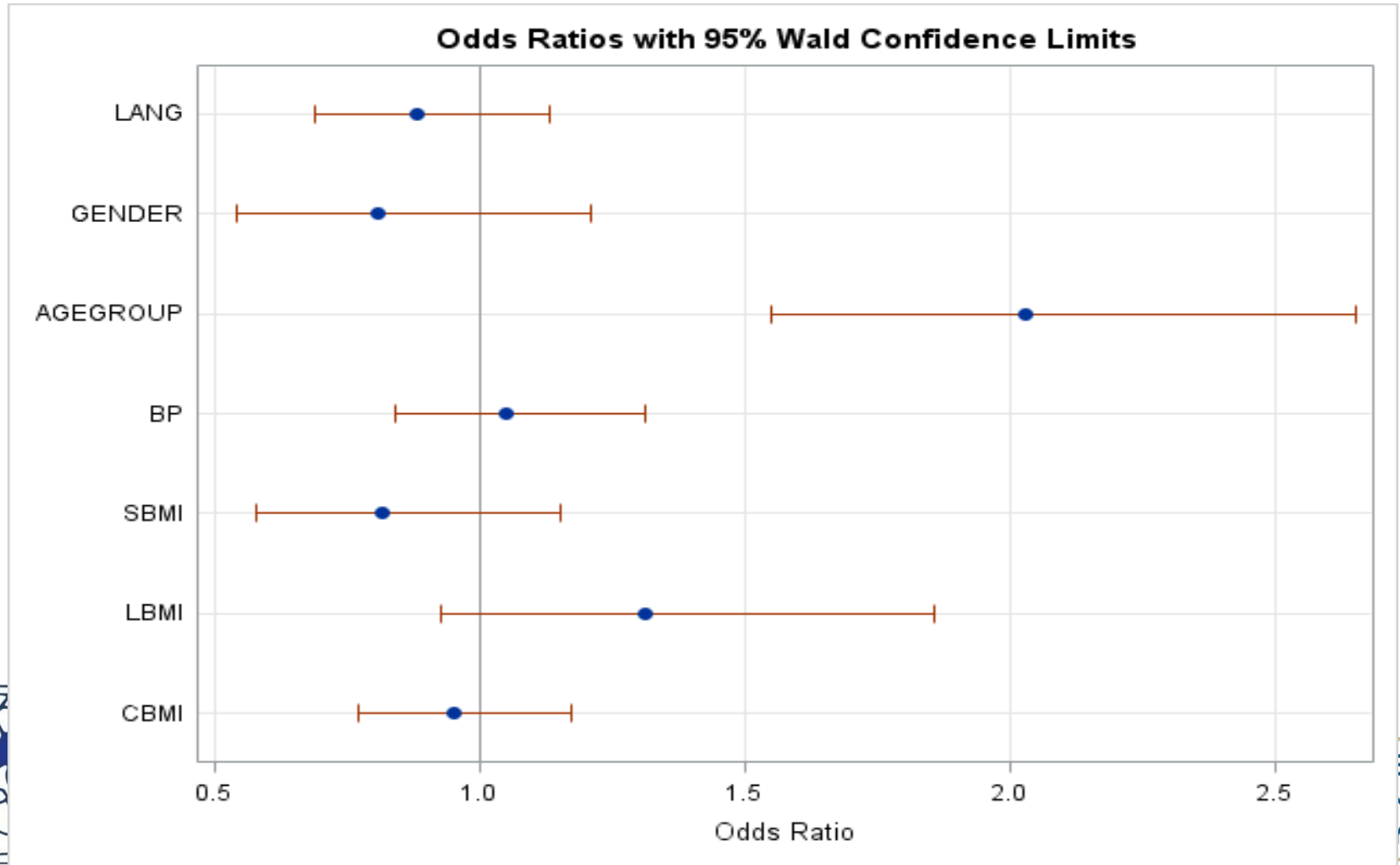
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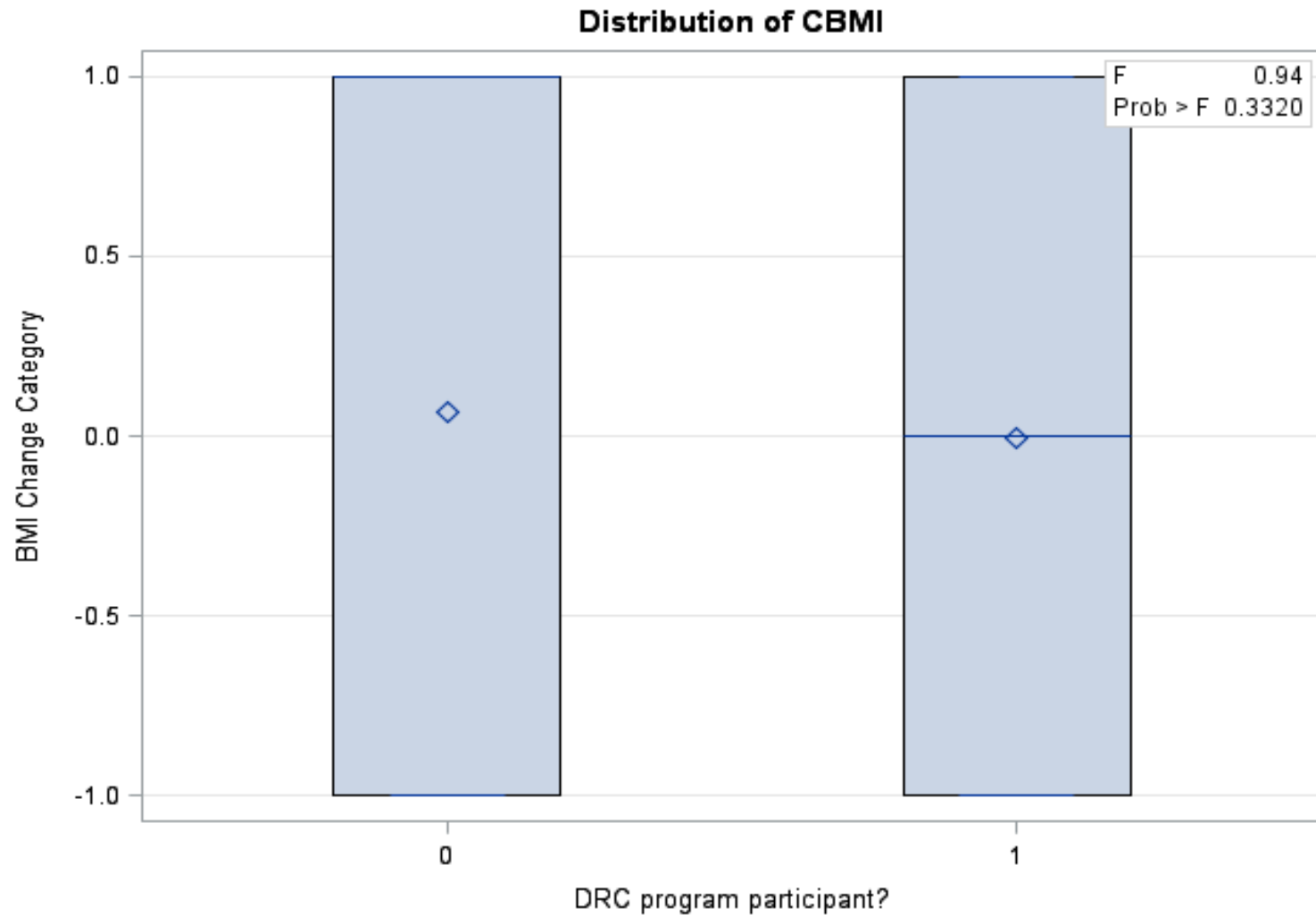
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Results: Logistic Regression



BMI Group Comparison





Limitations

- ▶ **Incomplete/Missing data**
 - ▶ Trigs 66%, LDL 63%, HDL 73%, Tot Chol 72%
 - ▶ HgA1C 35%, BMI 15%
- ▶ **Lack of protocol standardization**
 - ▶ Recording data ('WNL' v numbers)
 - ▶ Measuring biomarkers (fasting/non-fasting)
- ▶ **Temporality**
 - ▶ No notation of first DRC visit



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Conclusions

▶ Main findings

- ▶ Age Group, HgA1C, and Change in BMI significantly different between DRC and ST
- ▶ Patients with increased age and HgA1C have increased odds of being in DRC group
- ▶ Change in BMI significance likely due to large number of missing records in ST group



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Recommendations

- ▶ **Further DRC analysis**
 - ▶ Collect more data
 - ▶ Train data collectors
 - ▶ Note newly diagnosed diabetic patients
 - ▶ Pre/post DRC, pre/post ST
- ▶ **Increase access to Mary's Center DRC**
 - ▶ Increase rotational clinic hours and locations
 - ▶ Schedule more DRC days
 - ▶ Increase DRC staff



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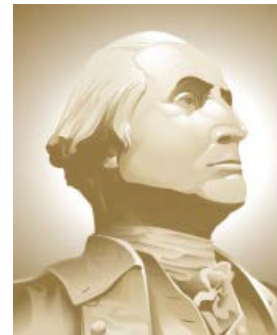


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