OUT OF POCKET HEALTH EXPENDITURE IN KARNATAKA

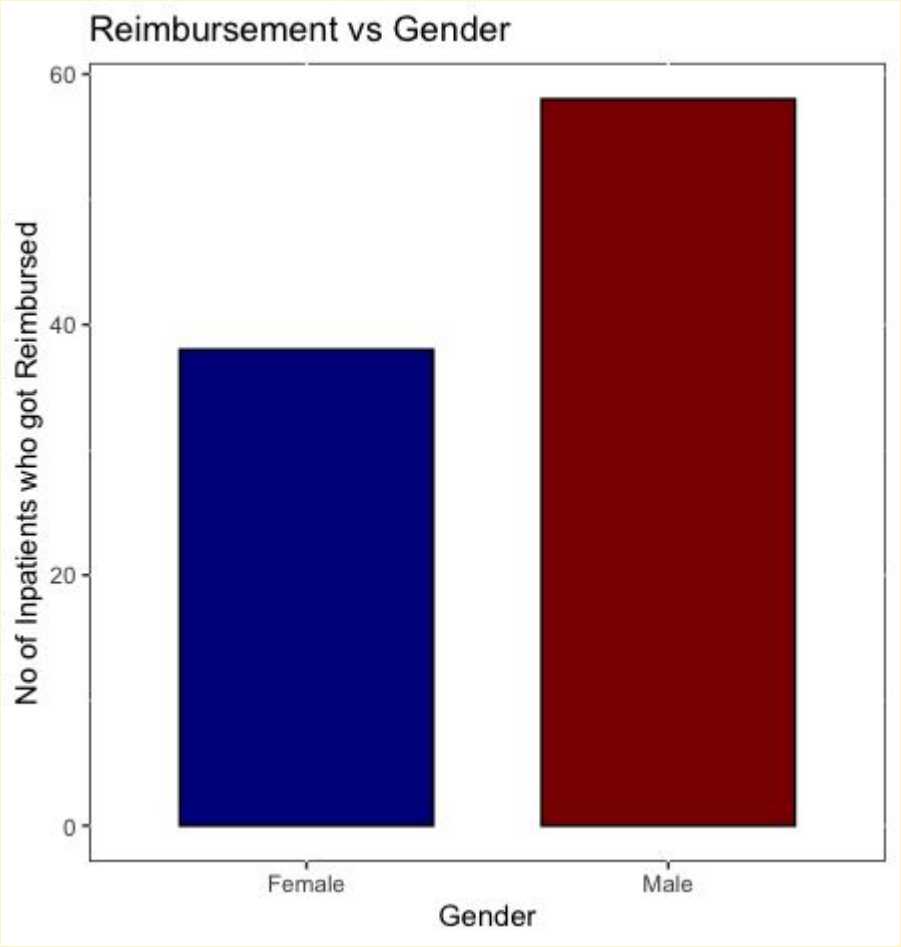
OBJECTIVES :

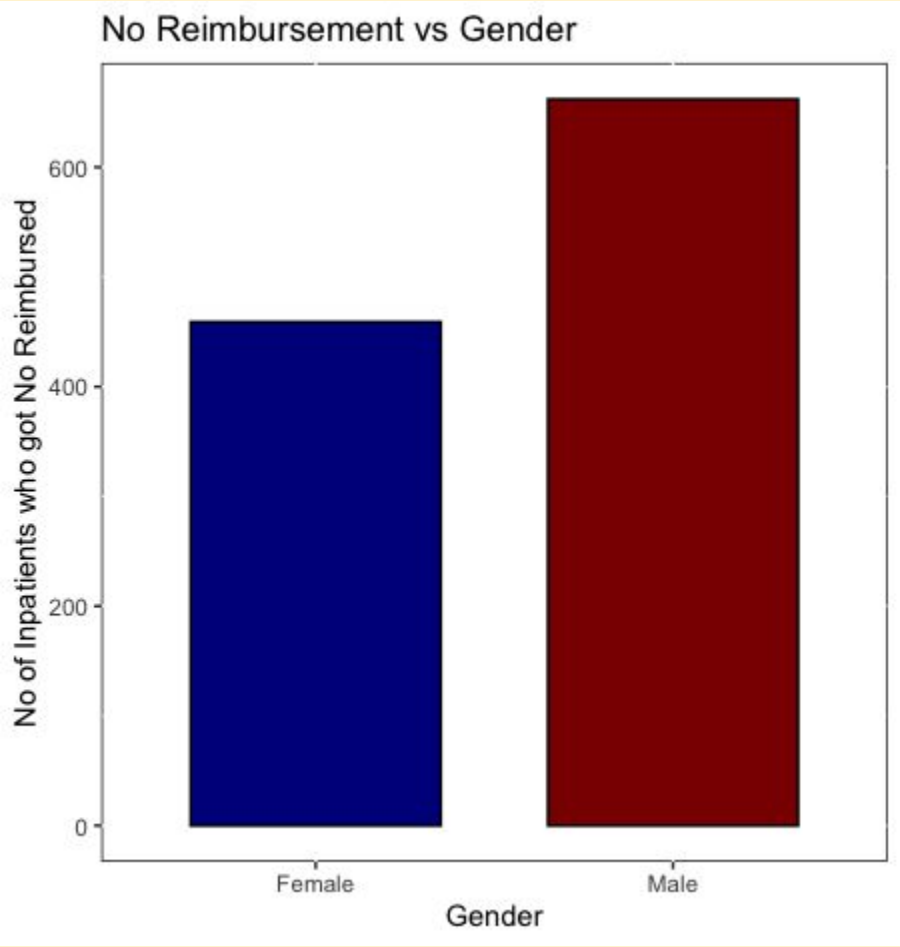
1) Which Wealth Quintile received more reimbursement and Non-reimbursement
2) How are the different Income Quintile groups paying for their total Expenditure incured
3) If different Socio Demographics play any role in patients getting Reimbursement (Non-Reimbursement)
4) How many Male and Female patients received Reimbursement (Non- Reimbursement)
5) If Expenses incured in Rural and Urban Sectors are the same
6) If the reimbursement(non-reimbursement) rates are different in Private and Public Hospitals
7) If Expenses incured in Private and Public Hospitals are the same
8) How are the costs of components in Medical Expenditure different in Private and Public Hospitals

Note : The analysis below was done for both Inpatients and Outpatients.

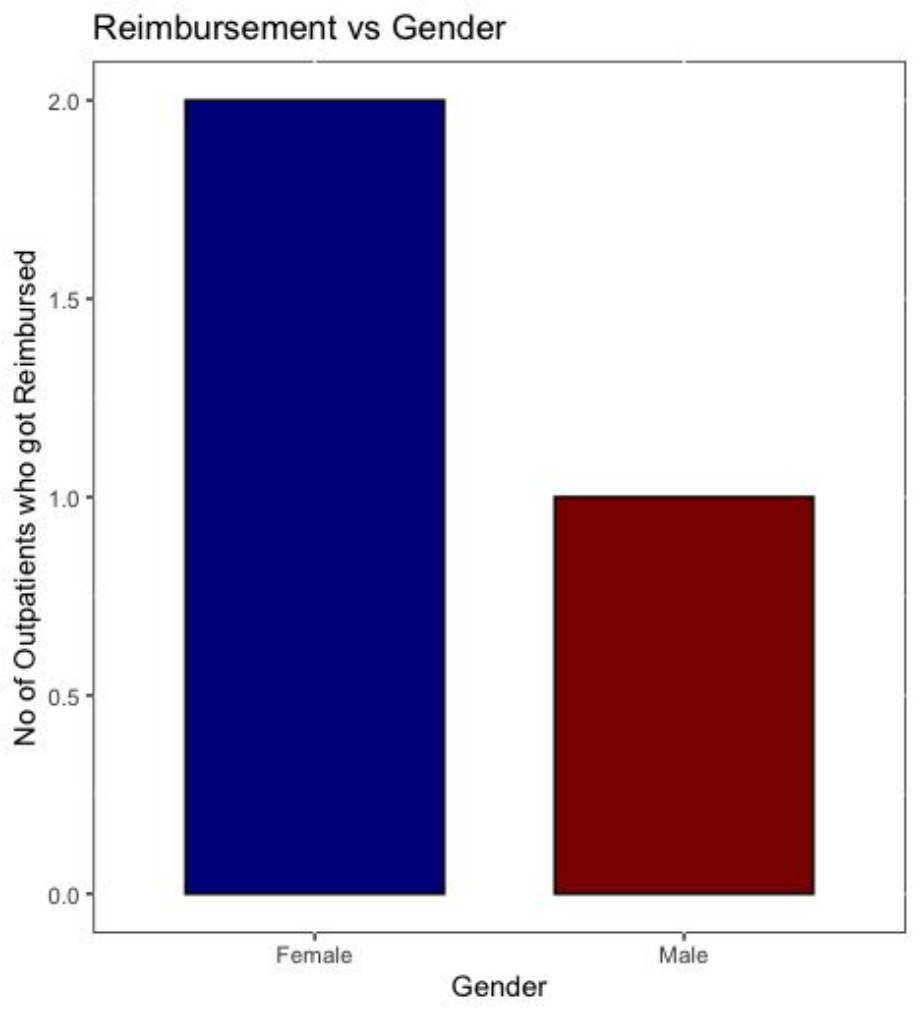
DATA DESCRIPTION :

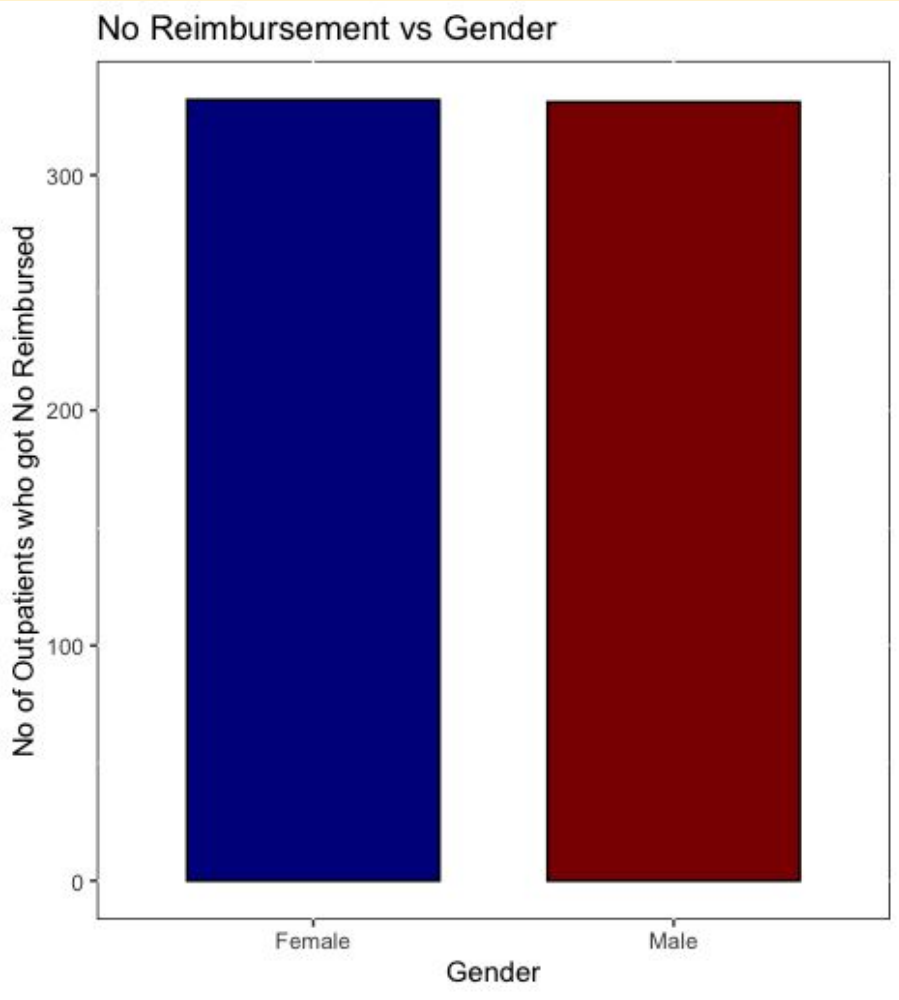
Number of Inpatients	91449 patients
Number of Outpatients	43219 patients
Number of Inpatients with Non communicable diseases	1284
Unique number of Inpatients with Non communicable diseases	1217
Number of Outpatients with Non communicable diseases	707
Unique number of Outpatients with Non communicable diseases	666

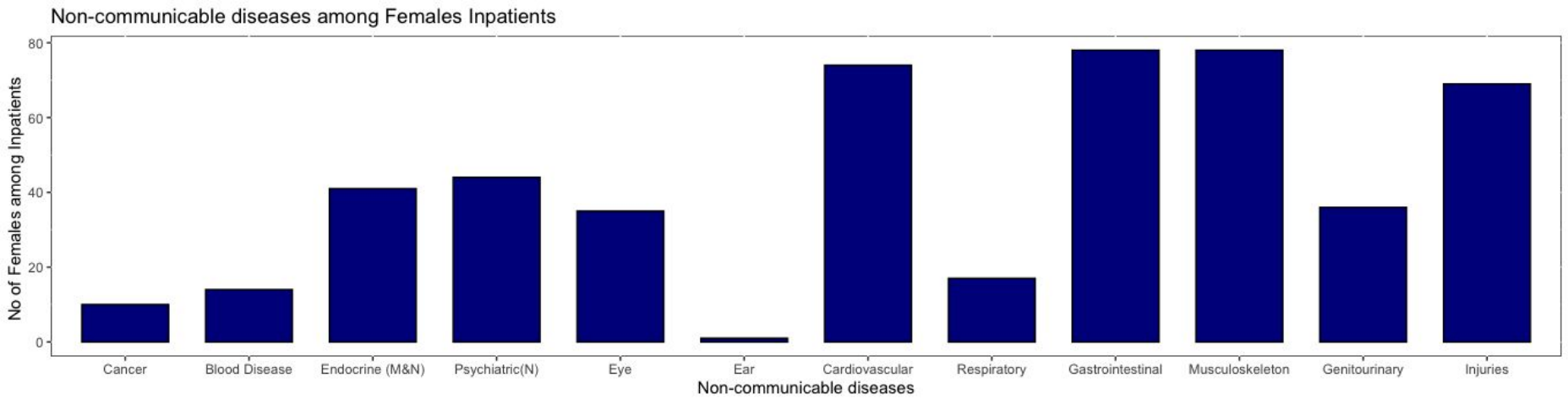


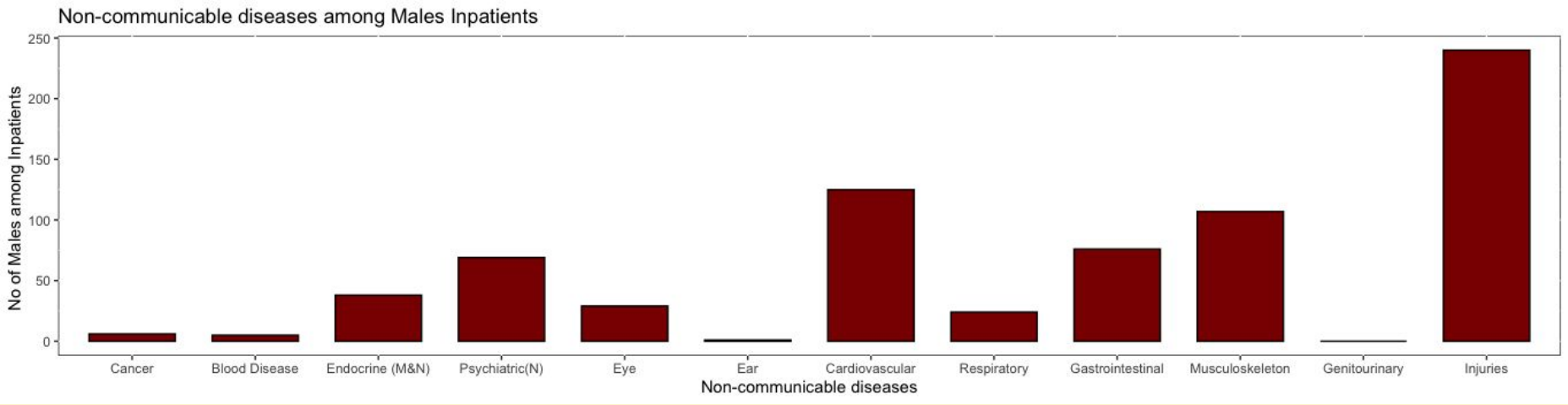


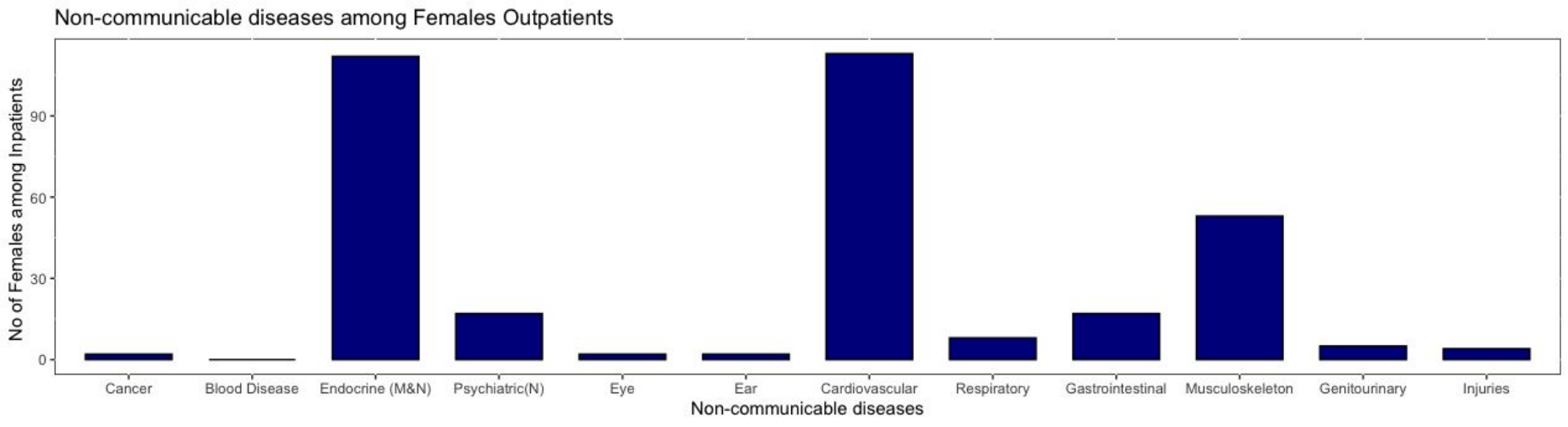
Note : Female Inpatients : 497 & Male Inpatients : 720

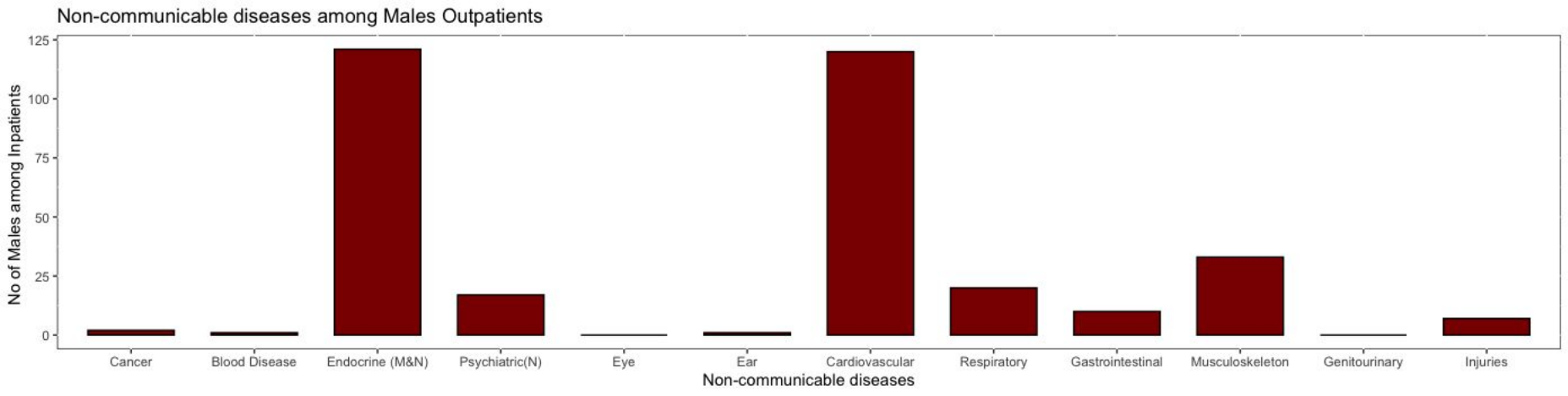

Reimbursement vs Gender
No of Outpatients who got Reimbursed
2.0
1.5
1.0
0.5
0.0
Female
Male
Gender

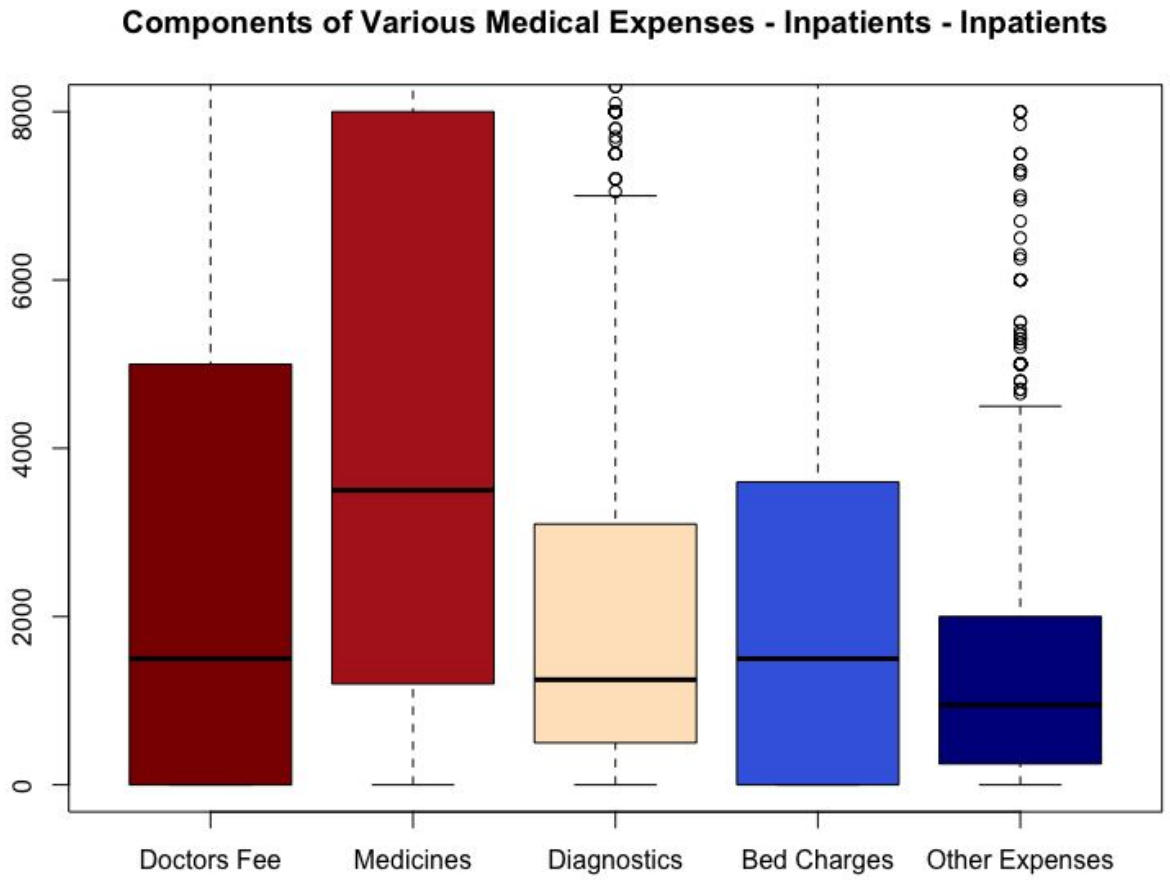

No Reimbursement vs Gender
No of Outpatients who got No Reimbursed
300
200
100
0
Female
Male
Gender

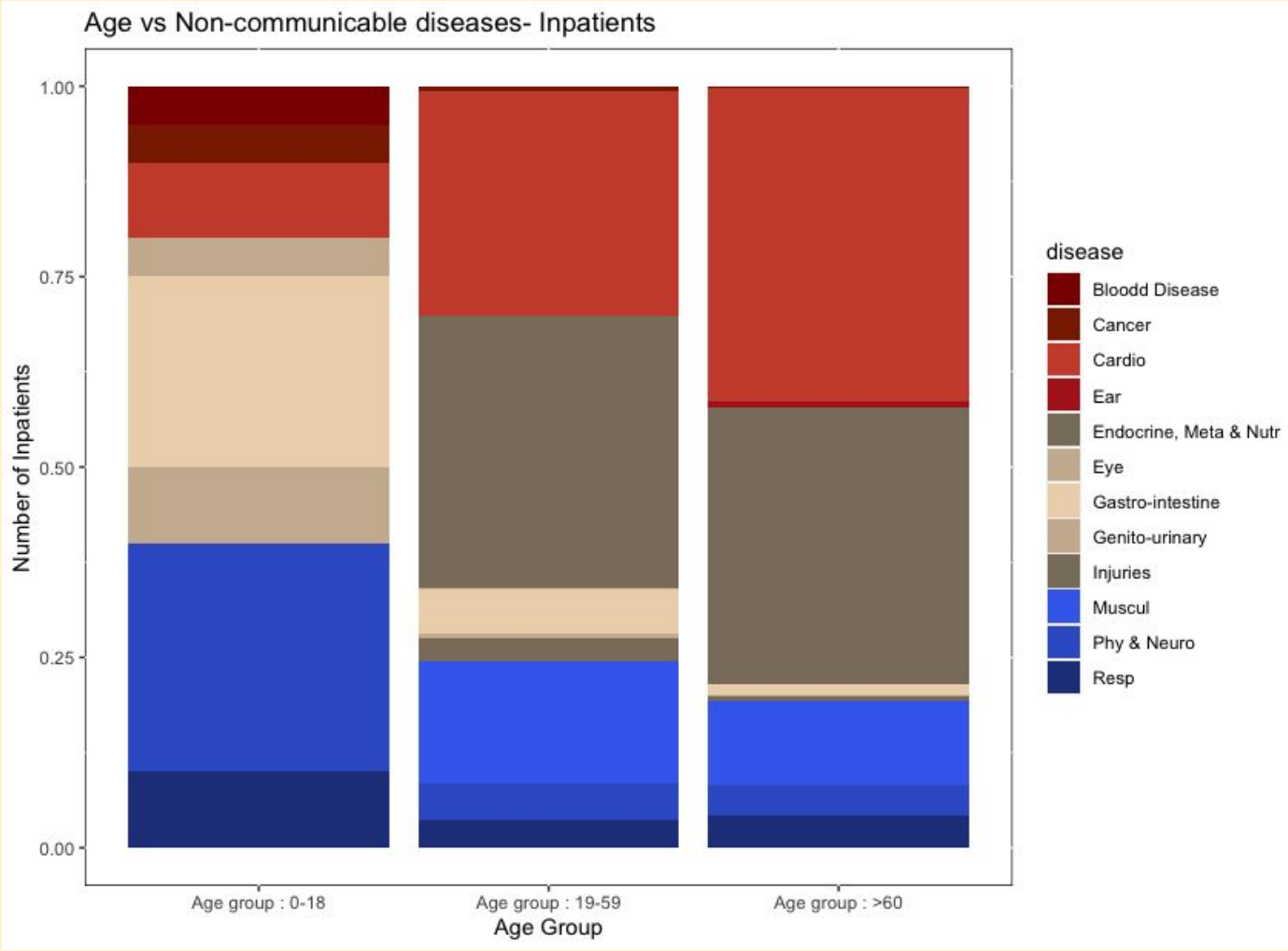

Non-communicable diseases among Females Inpatients
No of Females among Inpatients
0
20
40
60
80
Cancer
Blood Disease
Endocrine (M&N)
Psychiatric(N)
Eye
Ear
Cardiovascular
Respiratory
Gastrointestinal
Musculoskeletal
Genitourinary
Injuries
Non-communicable diseases

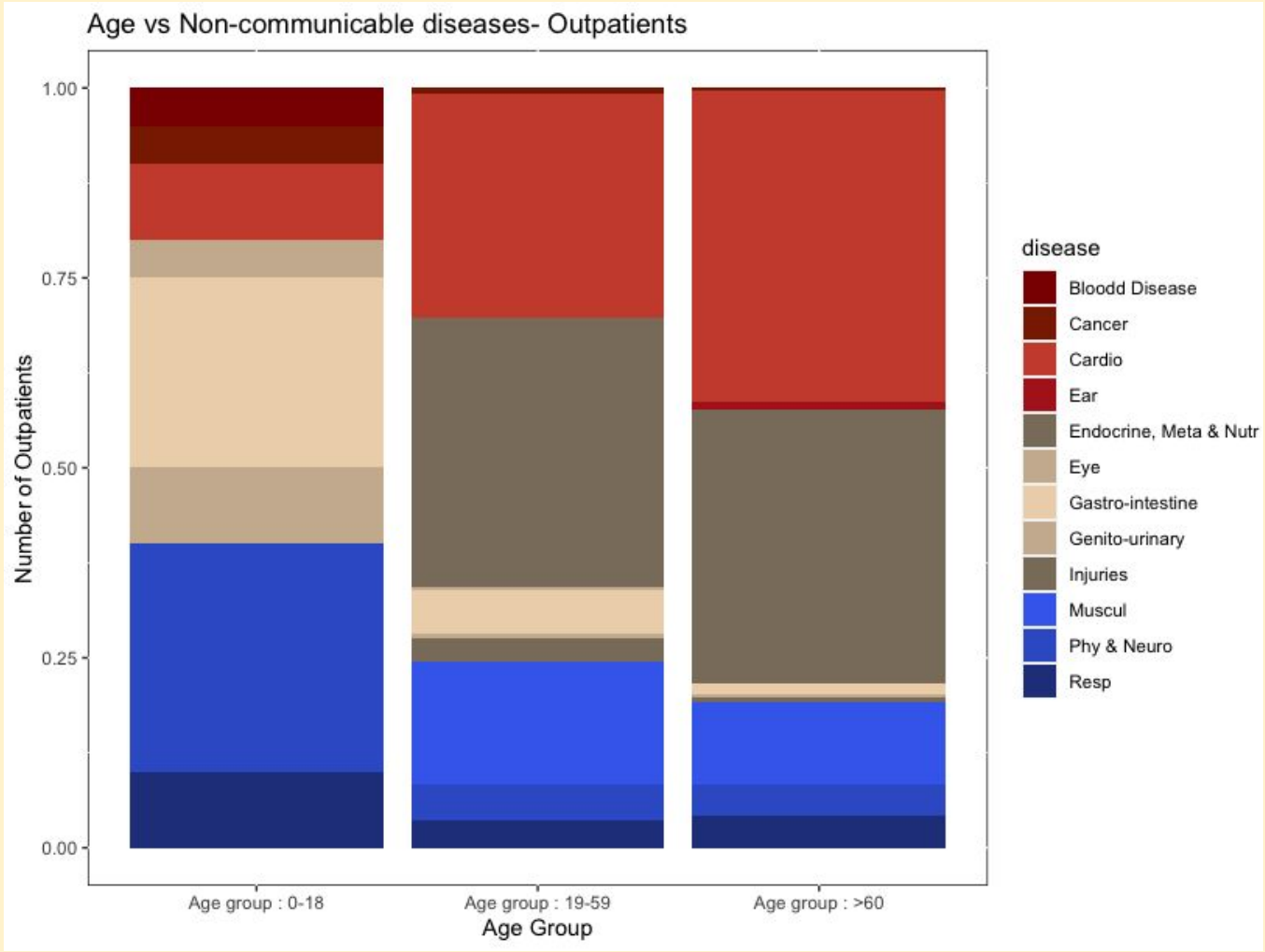

Non-communicable diseases among Males Inpatients
No of Males among Inpatients
0
50
100
150
200
250
Cancer
Blood Disease
Endocrine (M&N)
Psychiatric(N)
Eye
Ear
Cardiovascular
Respiratory
Gastrointestinal
Musculoskeletal
Genitourinary
Injuries
Non-communicable diseases

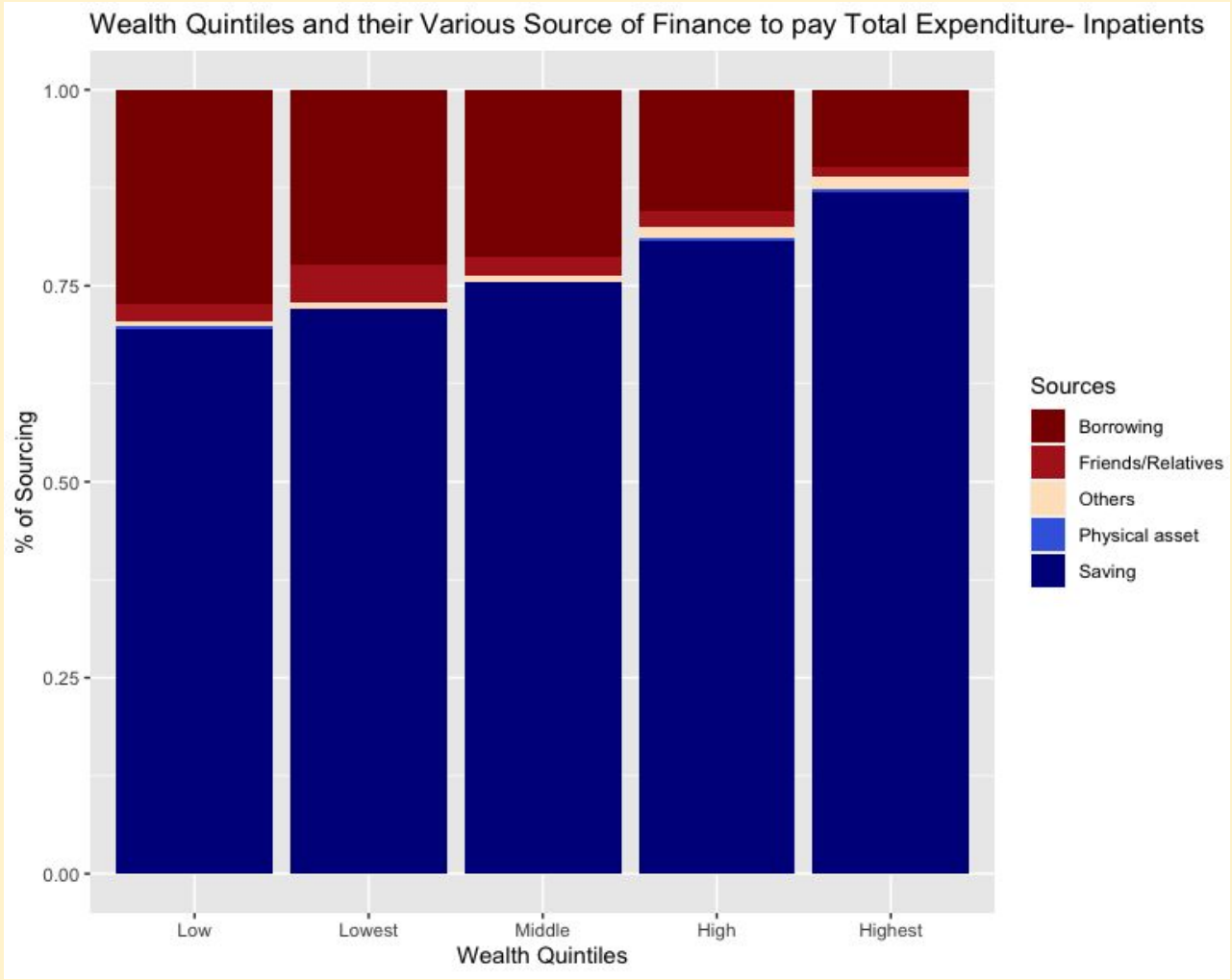

Non-communicable diseases among Females Outpatients
No of Females among Inpatients
0
30
60
90
Cancer
Blood Disease
Endocrine (M&N)
Psychiatric(N)
Eye
Ear
Cardiovascular
Respiratory
Gastrointestinal
Musculoskeleton
Genitourinary
Injuries
Non-communicable diseases

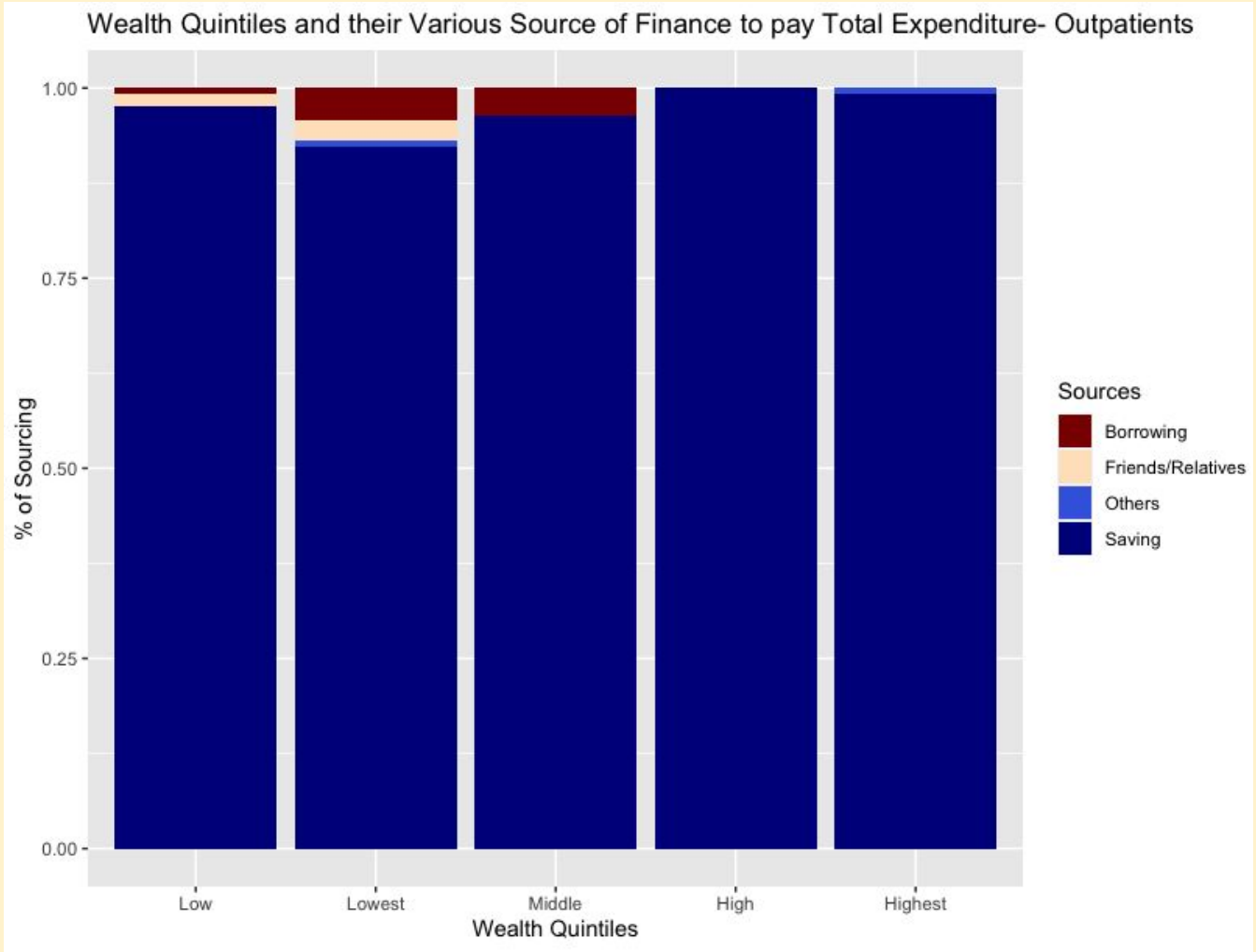

Non-communicable diseases among Males Outpatients
No of Males among Inpatients
0
25
50
75
100
125
Cancer
Blood Disease
Endocrine (M&N)
Psychiatric(N)
Eye
Ear
Cardiovascular
Respiratory
Gastrointestinal
Musculoskeleton
Genitourinary
Injuries
Non-communicable diseases

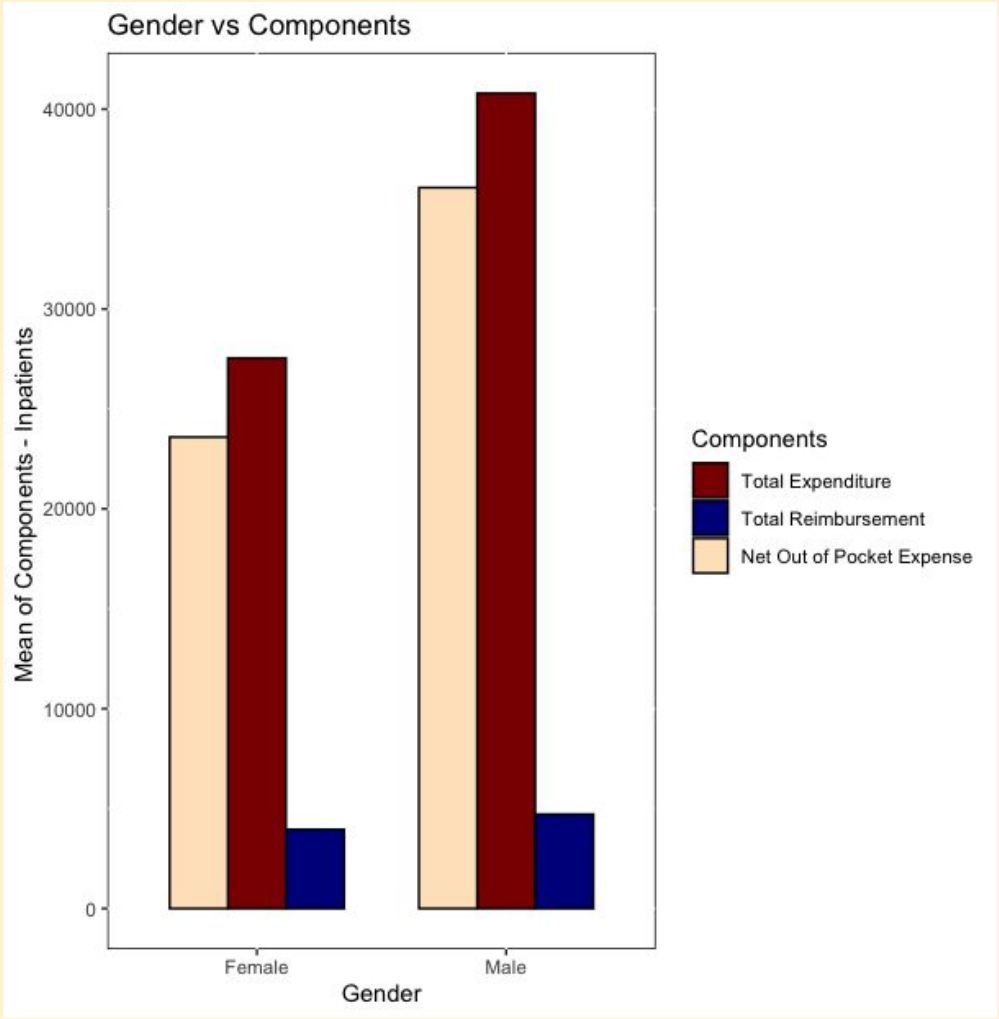

Components of Various Medical Expenses - Inpatients - Inpatients
0
2000
4000
6000
8000
Doctors Fee
Medicines
Diagnostics
Bed Charges
Other Expenses

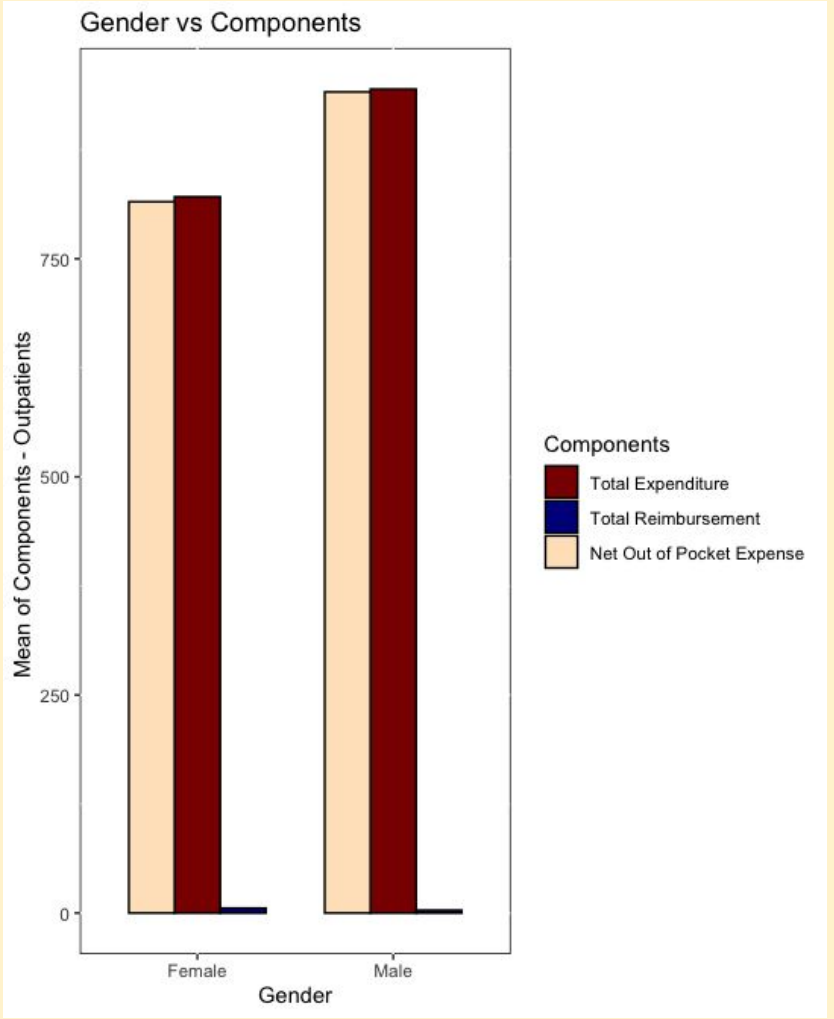

Age vs Non-communicable diseases- Inpatients
1.00
0.75
0.50
0.25
0.00
Number of Inpatients
Age group : 0-18
Age group : 19-59
Age group : >60
Age Group
disease
Bloodd Disease
Cancer
Cardio
Ear
Endocrine, Meta & Nutr
Eye
Gastro-intestine
Genito-urinary
Injuries
Muscul
Phy & Neuro
Resp


Age vs Non-communicable diseases- Outpatients
1.00
0.75
0.50
0.25
0.00
Number of Outpatients
Age group : 0-18
Age group : 19-59
Age group : >60
Age Group
disease
Bloodd Disease
Cancer
Cardio
Ear
Endocrine, Meta & Nutr
Eye
Gastro-intestine
Genito-urinary
Injuries
Muscul
Phy & Neuro
Resp

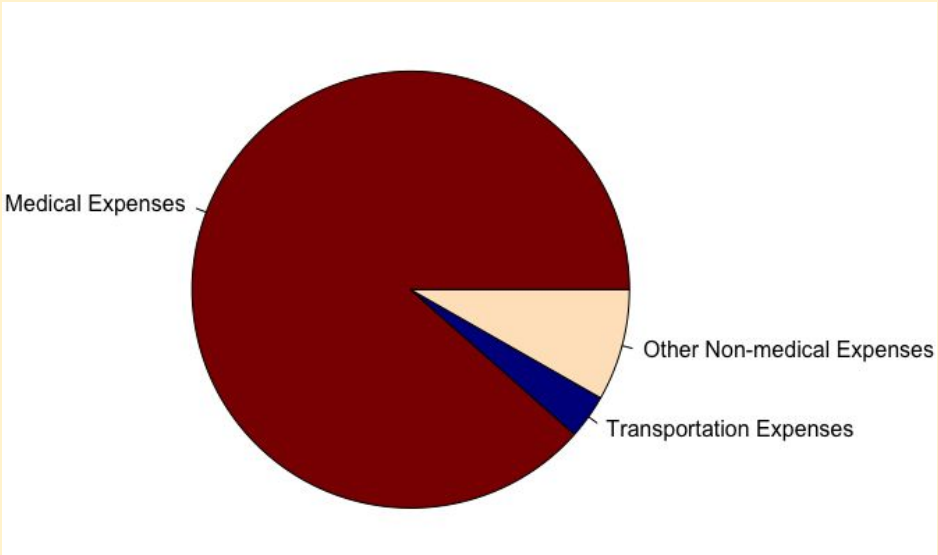

Wealth Quintiles and their Various Source of Finance to pay Total Expenditure- Inpatients
1.00
0.75
0.50
0.25
0.00
% of Sourcing
Low
Lowest
Middle
High
Highest
Wealth Quintiles
Sources
Borrowing
Friends/Relatives
Others
Physical asset
Saving

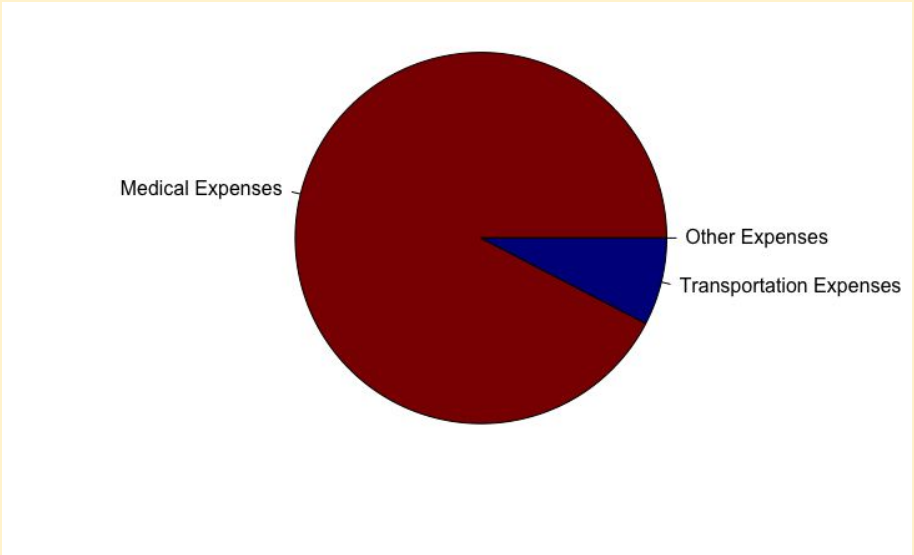

Wealth Quintiles and their Various Source of Finance to pay Total Expenditure- Outpatients
1.00
0.75
0.50
0.25
0.00
% of Sourcing
Low
Lowest
Middle
High
Highest
Wealth Quintiles
Sources
Borrowing
Friends/Relatives
Others
Saving


Gender vs Components
Mean of Components - Inpatients
40000
30000
20000
10000
0
Female
Male
Gender
Components
Total Expenditure
Total Reimbursement
Net Out of Pocket Expense

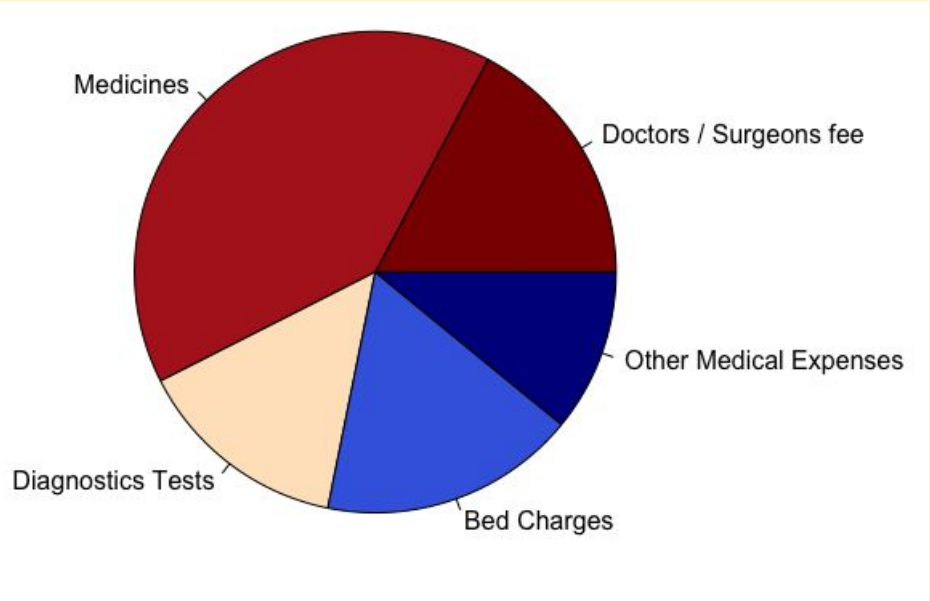

Gender vs Components
Mean of Components - Outpatients
750
500
250
0
Female
Male
Gender
Components
Total Expenditure
Total Reimbursement
Net Out of Pocket Expense

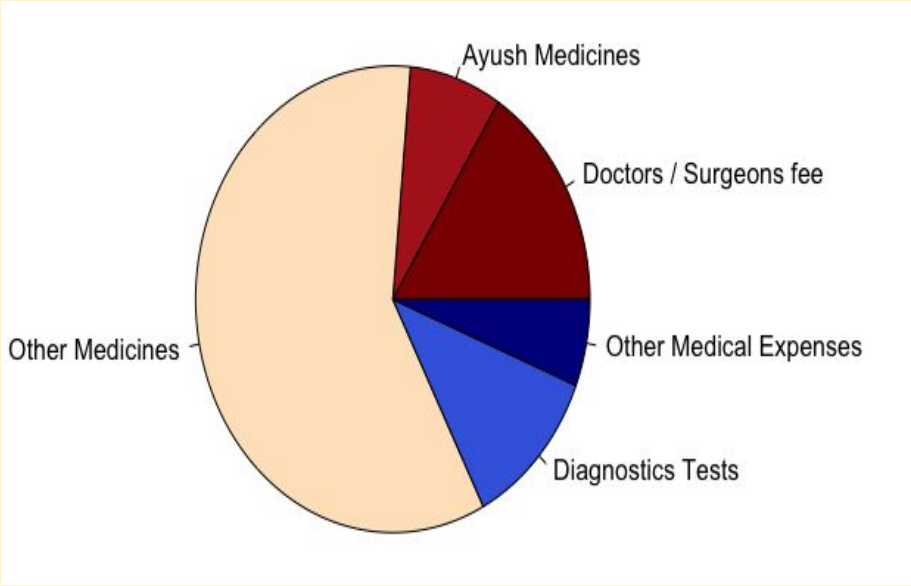
Various Components contributing to Total Expenditure (by median) - Inpatients and Outpatients

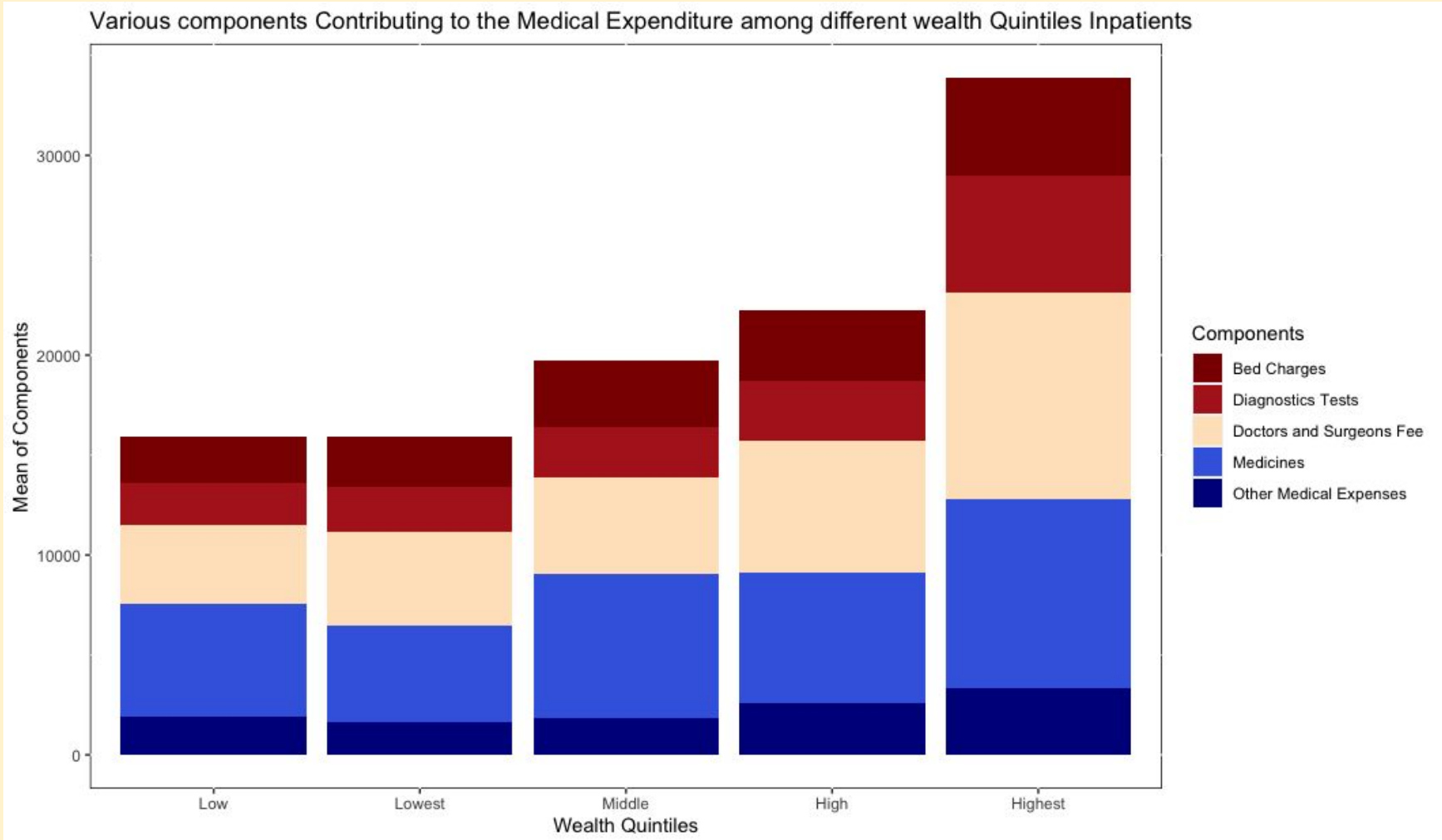


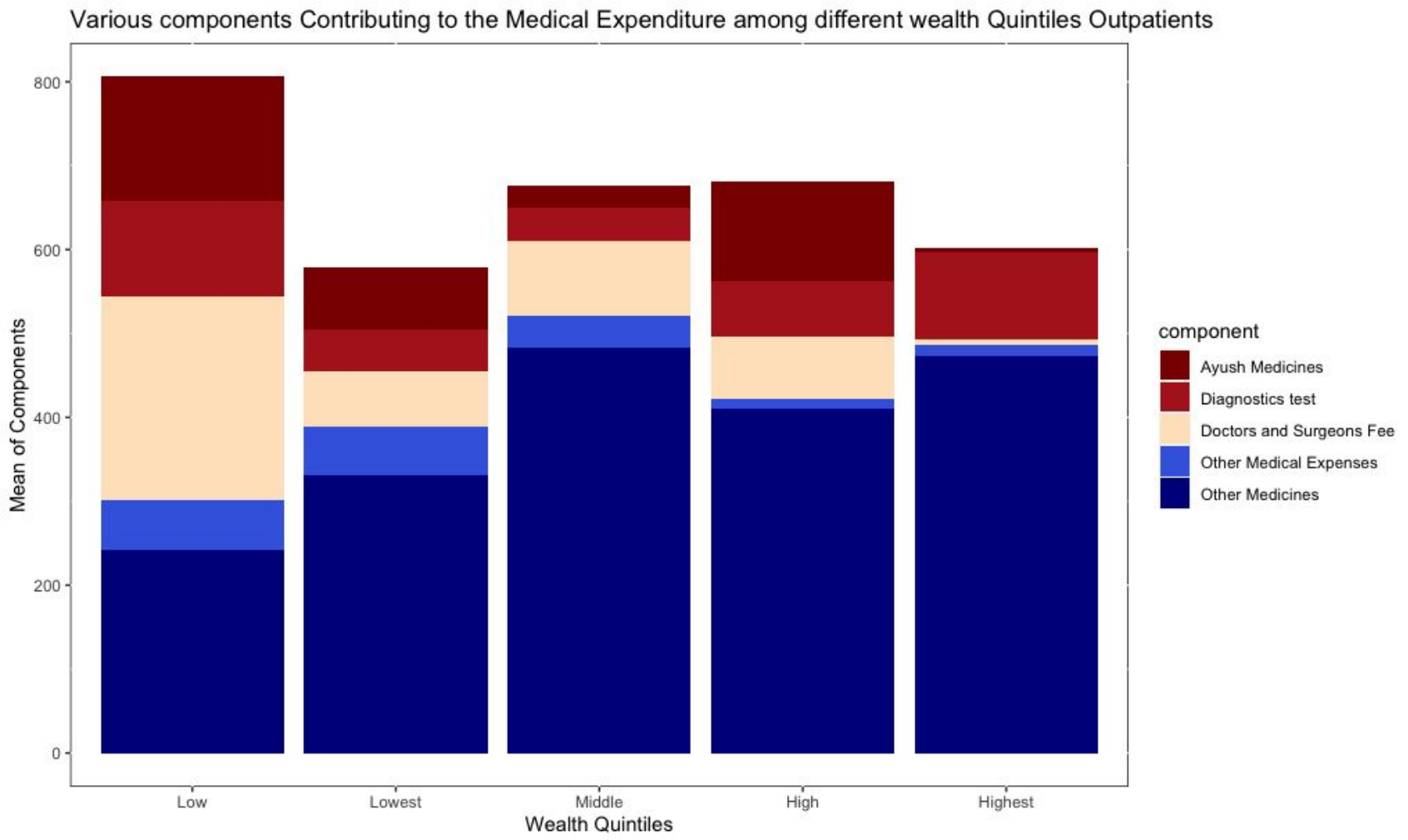


Various Components contributing to Medical Expenditure - Inpatients and Outpatients






Various components Contributing to the Medical Expenditure among different wealth Quintiles Inpatients
Mean of Components
30000
20000
10000
0
Low
Lowest
Middle
High
Highest
Wealth Quintiles
Components
Bed Charges
Diagnostics Tests
Doctors and Surgeons Fee
Medicines
Other Medical Expenses


Various components Contributing to the Medical Expenditure among different wealth Quintiles Outpatients
800
600
400
200
0
Mean of Components
Low
Lowest
Middle
High
Highest
Wealth Quintiles
component
Ayush Medicines
Diagnostics test
Doctors and Surgeons Fee
Other Medical Expenses
Other Medicines

Conclusions Based on the above visualizations :

	NCDs Inpatients : 1284	**Number of Patients**
Inpatient	**Number of Patients with NCDs + CDs**	**3848**
	Number of Patients with NCDS + CDs who got reimbursement	**247**
	Number of Patients with NCDs	**1217**
	Patients with NCDs who have gotten reimbursement • **Partial** • **Full**	**96** • **94** • **2**
	No reimbursement	**1121**

	NCDs Outpatients : 707	Number of Patients
Outpatient	Number of Patients with NCDs + CDs	1091
	Number of Patients with NCDS + CDs who got reimbursement	3
	Number of Patients with NCDs	666
	Received reimbursement including only NCDs • Partial • Full	3 • 2 • 1
	No reimbursement only NCDs	663

Test of Association of Reimbursed (Non- reimbursed) with various Socio Demographics

Weighted Chi-square test to check for Association between the following :
Ho : There exists no relationship between Age and Reimbursement : they are Independent
vs
H1 : There exists a relationship between Age and Reimbursement : they are Dependent

Variable	Category	Reimbursement n(%)	Non-Reimbursement n(%)	P- value
Age	0-18	5(5.21%)	106(9.46%)	0.545
	19-59	59(61.46%)	682(60.83%)	Ho is accepted
	>60	32(33.33%)	333(29.71%)	

Ho : There exists no relationship between Gender and Reimbursement : they are Independent
vs
H1 : There exists a relationship between Gender and Reimbursement : they are Dependent

Variable	Category	Reimbursement n(%)	Non-Reimbursement n(%)	P- value
Gender	Male	58(60.42%)	662(59.05%)	0.361
	Female	38(39.58%)	459(40.95%)	Ho is accepted

Ho : There exists no relationship between Marital Status and Reimbursement : they are Independent
vs
H1 : There exists a relationship between Marital Status Type and Reimbursement : they are Dependent

Variable	Category	Reimbursement n(%)	Non-Reimbursement n(%)	P- value
Marital Status	Never Married	10(10.42%)	183(16.33%)	0.27
	Currency married	70(72.91%)	735(65.57%)	Ho is accepted
	Widowed	16(16.67%)	197(17.57%)	
	Divorced/Separated	0(0%)	6(0.535%)	

Ho : There exists no relationship between Social Group and Reimbursement : they are Independent
vs
H1 : There exists a relationship between Social Group and Reimbursement : they are Dependent

Variable	Category	Reimbursement n(%)	Non-Reimbursement n(%)	P- value
Social Group	Scheduled Tribes / Scheduled Castes	12(12.5%)	229(20.43%)	<0.05
	Other Backward Class	35(36.46%)	561(50.04%)	Ho is rejected
	Others	9(9.38%)	331(29.53%)	

Ho : There exists no relationship between General Education and Reimbursement : they are Independent
vs
H1 : There exists a relationship between General Education and Reimbursement : they are Dependent

Variable	Category	Reimbursement n(%)	Non-Reimbursement n(%)	P- value
General Education	Not Literate	8(8.34%)	366(32.64%)	< 0.05
	Literate 1) Without any Schooling 2) Without formal Schooling 3) Primary 4) Secondary 5) Diploma 6) Graduate	 1(1.04%) 0(0%) 23(23.96%) 25(26.05%) 6(6.25%) 33(34.38%)	 6(0.54%) 1(0.09%) 396(35.33%) 244(21.77%) 30(2.67%) 78(6.95%)	Ho is rejected

Ho : There exists no relationship between Place of Residence and Reimbursement : they are Independent
vs
H1 : There exists a relationship between Place of Residence and Reimbursement : they are Dependent

Variable	Category	Reimbursement n(%)	Non-Reimbursement n(%)	P- value
Place of Residence	Rural	21(21.88%)	612(54.6%)	< 0.01
	Urban	75(78.13%)	509(45.4%)	Ho is rejected

Ho : There exists no relationship between Type of Medical Institution and Reimbursement : they are Independent
vs
H1 : There exists a relationship between Type of Medical Institution and Reimbursement : they are Dependent

Variable	Category	Reimbursement n(%)	Non-Reimbursement n(%)	P- value
Type of Medical Institution	Govt/Public hospital (incl.HSC/PHC / CHC etc..)	1(1.041%)	296(26.4%)	< 0.05
	Private Hospital	93(96.88%)	788(70.3%)	Ho is rejected

Ho : There exists no relationship between Wealth Quintiles and Reimbursement : they are Independent
vs
H1 : There exists a relationship between Wealth Quintiles and Reimbursement : they are Dependent

Variable	Category	Reimbursement n(%)	Non-Reimbursement n(%)	P- value
Wealth Quintiles	Lowest	6(6.25%)	259(23.10%)	< 0.05
	Low	7(7.29%)	216(19.27%)	Ho is rejected
	Middle	11(11.45)	262(23.37%)	
	High	21(21.88%)	191(17.03%)	
	Highest	51(53.12%)	193(17.22%)	

Ho : There exists no relationship between Household Type and Reimbursement : they are Independent
vs
H1 : There exists a relationship between Household Type and Reimbursement : they are Dependent

Variable	Category	Reimbursement n(%)	Non-Reimbursement n(%)	P- value
Household type	Self-employed in agriculture	19(19.79%)	525(46.83%)	< 0.05
	Self-employed in non-agriculture	59(61.45%)	235(20.96%)	Ho is rejected
	Regular wage/salary earning in agriculture	5(5.20%)	89(7.93%)	
	Regular wage/salary earning in non-agriculture	4(4.16%)	30(2.67%)	
	Casual labour in agriculture	1(1.04%)	103(9.18%)	
	Casual labour in non- agriculture	3(3.125%)	63(5.61%)	
	Others	5(5.20%)	197(6.77%)	

Note :Test of association could not be performed due to the small number of Outpatients who received reimbursement (3 of 666)

Conclusion from the above Test of Association :

1) Age and Reimbursement (Non-reimbursement) are Independent and Patients who fall between the age range of 19 to 59 received the highest reimbursement rates of any age group.

2) Gender and Reimbursement (Non-reimbursement) are Independent and Males patients received reimbursement in greater numbers than females patients.

3) Marital Status and Reimbursement(Non-reimbursement) are Independent and Reimbursement for patients who are currently married is more

4) Social Group and Reimbursement (Non-reimbursement) are Dependent , there is an association between the two groups and Other backward Class patients received reimbursement in greater number than other social groups.

5) General Education and Reimbursement (Non-reimbursement) are Dependent , there is an association between the two groups and Literate patients received reimbursement in greater number than Illiterate patients.

6) Place of Residence and Reimbursement (Non-reimbursement) are Dependent , there is an association between the two groups and Urban residents received reimbursement in greater number than Rural residents.

7) Type of Medical Institution and Reimbursement (Non-reimbursement) are Dependent , there is an association between the two groups and Private Hospital inpatients received more reimbursement than any other Medical Institution.

8) Wealth Quintile and Reimbursement (Non-reimbursement) are Dependent , there is an association between the two groups and Patients belonging to the Highest Quintile received more reimbursement.

9) Household type and Reimbursement (Non-reimbursement) are Dependent , there is an association between the two groups and Patients who are Self-employed in non-agriculture received more reimbursement.

Test of Association of type of Medical Expenditure and Mean Expenditure

T-test to check for Association between the following :
Hypothesis :
Ho : The difference in Public and Private mean expenditure is zero
vs
H1 : The difference in Public and Private mean expenditure is different from zero

Variable	Category	Mean Expenditure (95% Confidence Interval)	t value	P- value
Type of Medical Institution	Public	7729.04(-43043.56, -31050.93)	-12.125	< 0 .01
	Private	44776.28(-43043.56 ,-31050.93)		Ho is rejected

Ho : There is no difference in the mean expenditure of Rural and Urban Sectors
vs
H1 : There is a difference between the mean expenditure of Rural and Urban Sectors

Variable	Category	Mean Expenditure (95% Confidence Interval)	t value	P- value
Place of Residence	Rural	25478.89(-29564.93, -11703.77)	-4.5359	< 0.01
	Urban	46113.24(-29564.93, -11703.77)		Ho is rejected

Ho : The difference in Public and Private mean of various components of the Medical expenditure is zero
vs
H1 : The difference in Public and Private mean of various components of the Medical expenditure is different from zero

Variable		Type of Medical Institution		t - value	P- value
		Public	Private		
Components of Medical Expenditure	Doctors/ Surgeon fee	418.55	8008.09	-11.86	< 0.01
	Medicines	2838.57	9683.54	-6.87	< 0.01
	Diagnostics fee	1157.19	4262.91	-7.73	< 0.01
	Bed Charges	274.74	4756.2145	-14.60	< 0.01
	Other Medical expenses	929.75	3185.09	- 4.8008,	< 0.01

Test of Association of Wealth Quintiles and Mean of components contributing to Medical Expenditure - Inpatients

Ho : There is no difference in the mean of components in various quintile groups

vs

H1 : At least one quintile groups mean of various component differs significantly from the other groups

Components	Lower	Low	Middle	High	Highest	F-value	Pr(>F)
Doctors/ Surgeon fee	4647.543	3938.74	4867.63	6567.66	10353.15	6.60	< 0.01
Medicines	4843.77	5659.35	7227.85	6527.95	9423.43	4.75	< 0.01
Diagnostics fee	2266.13	2112.5	2472.1	2979.67	5869.6	9.22	< 0.01
Bed Charges	2516.04	2292.66	3319.22	3581.07	4884.18	5.28	< 0.01
Other Medical expenses	1644.33	1927.72	1820.12	2608.9	3361.3	1.7832	0.13 > 0.01

Test of Association of Wealth Quintiles and Mean of components contributing to Medical Expenditure - Inpatients

Ho : There is no difference in the mean of component of various quintile groups
vs
H1 : at least one quintile group differs significantly from the other groups

Components	Lowest	Low	Middle	High	Highest	F-value	Pr(>F)
Doctors/ Surgeon fee	66.7	241.53	88.76	73.23	6.63	13.11	< 0.01
AYUSH Medicines	74.70	148.08	27.05	118.99	3.7	7.27	< 0.01
Other Medicines	331.75	241.36	483.62	409.62	473.00	6.63	< 0.01
Diagnostics tests	48.85	114.68	39.45	67.09	104.62	3.68	0.005
Other Medical Expenses	57.26	60.5	37.60	13.04	13.28	3.58	0.006

Conclusion from the above Test of Association :

1) The average expenditure in the Public and Private sectors is different from one another.

2) The average expenditure of Rural and Urban Sectors is different from one another.

3) In both Inpatients and Outpatients , atleast one Wealth Quintiles mean of various components of Medical Expenditure differs significantly from the other.