Group: data detective

Document 2

report

SQL

duplicate

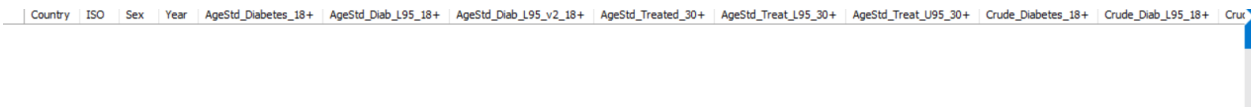
	Country	ISO	Sex	Year	COUNT(*)

No duplicate

Checking for null values

no null value

negative values



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Data after normalize percentage column

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GY	Men	1991	0.104719193	0.064156389	0.157793799	0.404989895	0.241252496	0.5874369	0.079946277	0.047271345
GY	Men	1992	0.106003513	0.067013421	0.15556948	0.412705587	0.253909494	0.585439798	0.081057939	0.049622958
GY	Men	1993	0.10741698	0.069848627	0.154241195	0.420284771	0.269487542	0.584410261	0.082315858	0.051627114
GY	Men	1994	0.108996571	0.071761527	0.154437743	0.427746367	0.281052034	0.585513449	0.083766098	0.053725716
GY	Men	1995	0.110714559	0.073850319	0.154179967	0.434977424	0.292772778	0.585703581	0.085345274	0.056081307
GY	Men	1996	0.112613008	0.07642182	0.154740156	0.4420822	0.304111794	0.585651876	0.087117452	0.057794821
GY	Men	1997	0.114724512	0.078614479	0.156716656	0.449006206	0.315833768	0.588375649	0.089121662	0.059981443
GY	Men	1998	0.117053334	0.081818334	0.158215714	0.455761958	0.327540587	0.589214577	0.091301023	0.062123653
GY	Men	1999	0.119643883	0.084466804	0.159847588	0.462338127	0.338290487	0.590037264	0.093706911	0.064289041
GY	Men	2000	0.12254439	0.087323468	0.162341946	0.468617649	0.349077747	0.592106111	0.096407565	0.067155853
GY	Men	2001	0.125799407	0.091240447	0.164100152	0.474576754	0.359536344	0.593326445	0.099423617	0.070570993
GY	Men	2002	0.129424007	0.095264762	0.167405194	0.480209313	0.368859686	0.594157318	0.102801749	0.074398392
GY	Men	2003	0.133470015	0.100311203	0.171167522	0.485475148	0.379509838	0.593603731	0.106594328	0.078486577

Count the total number of rows

number_of_rows
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How has the age-standardized prevalence of diabetes (AgeStd_Diabetes_18+) in Egypt changed from 1990 to 2022, and what are the differences between men and women?

year	sex	diabetes_prevalence
1990	Men	1036.5290400000001
1990	Women	1088.09988
1991	Men	1047.19193
1991	Women	1126.53087
1992	Men	1060.03513
1992	Women	1165.6678900000002
1993	Men	1074.1698
1993	Women	1205.25661
1994	Men	1089.9657100000002
1994	Women	1244.86531
1995	Men	1107.14559
1995	Women	1284.66992
1996	Men	1126.1300800000001
1996	Women	1324.05064
1997	Men	1147.24512
1997	Women	1362.74213
1998	Men	1170.53334
1998	Women	1400.84934
1999	Men	1196.43883
1999	Women	1438.1023300000002
2000	Men	1225.4439
2000	Women	1474.9067900000002
2001	Men	1257.99407
2001	Women	1512.0803299999998

Diabetes prevalence in Egypt has steadily increased from 1990 to 2022, with women consistently having higher rates than men. In 1990, prevalence was around **1036.53 for men** and **1088.10 for women**, rising sharply to **2631.99 for men** and **2879.25 for women** in 2022. The increase has accelerated over time, likely due to

lifestyle changes, urbanization, and improved healthcare diagnostics. If this trend continues, diabetes cases may rise even further, highlighting the need for better public health strategies, awareness, and lifestyle interventions to slow down this growing health issue.

What are the differences in diabetes prevalence (AgeStd_Diabetes_18+) and treatment rates (AgeStd_Treated_30+) between men and women in Egypt from 1990 to 2022?

Year	Sex	AgeStd_Diabetes_18+	AgeStd_Treated_30+
1990	Men	1036.5290400000001	39.7206469
1990	Women	1088.09988	39.015169900000004
1991	Men	1047.19193	40.4989895
1991	Women	1126.53087	39.5442177
1992	Men	1060.03513	41.270558699999995
1992	Women	1165.6678900000002	40.0720104
1993	Men	1074.1698	42.0284771
1993	Women	1205.25661	40.598495400000004
1994	Men	1089.9657100000002	42.7746367
1994	Women	1244.86531	41.1169679
1995	Men	1107.14559	43.4977424
1995	Women	1284.66992	41.6317141
1996	Men	1126.1300800000001	44.20822
1996	Women	1324.05064	42.1495366
1997	Men	1147.24512	44.9006206
1997	Women	1362.74213	42.6516463
1998	Men	1170.53334	45.5761958
1998	Women	1400.84934	43.1441046
1999	Men	1196.43883	46.2338127
1999	Women	1438.1023300000002	43.6249811

cleaned_diabetes_6

From 1990 to 2022, diabetes prevalence in Egypt increased significantly for both men and women, with women consistently having higher rates than men. In 1990, prevalence was **1036.53 for men** and **1088.10 for women**, rising to **2631.99 for men** and **2879.25 for women** in 2022. While treatment rates (AgeStd_Treated_30+) also increased, men generally had higher treatment rates than women. In 1990, treatment rates were **39.72 for men** and **39.01 for women**,

peaking in **2010 at 50.17 for men** and **47.32 for women**, before slightly declining by 2022 to **44.41 for men** and **46.82 for women**. Despite rising diabetes cases, treatment rates have stagnated or declined slightly in recent years, especially for men, highlighting potential gaps in diabetes management and access to care.

What proportion of people with diabetes in Egypt remain untreated, and how has this proportion changed from 2000 to 2021?

Year	Sex	AgeStd_Diabetes_18+	AgeStd_Treated_30+	Untreated_Percentage
2000	Men	1225.4439	46.861764900000004	96.17593552018171
2000	Women	1474.9067900000002	44.0918344	97.01053417755301
2001	Men	1257.99407	47.4576754	96.22751199455178
2001	Women	1512.0803299999998	44.5314367	97.05495562527422
2002	Men	1294.24007	48.0209313	96.28964267038958
2002	Women	1549.68039	44.9571999	97.09893729119202
2003	Men	1334.70015	48.5475148	96.36266506750599
2003	Women	1589.39995	45.359848400000004	97.1461023136436
2004	Men	1380.54882	49.0100215	96.44996100174133
2004	Women	1632.0863100000001	45.7445347	97.19717429037193
2005	Men	1432.86929	49.3990198	96.5524406067772
2005	Women	1679.3117199999997	46.0906411	97.25538501571346
2006	Men	1491.59056	49.7033925	96.66775897938105
2006	Women	1731.4354600000001	46.3958863	97.32038026413066
2007	Men	1556.83477	49.9224386	96.79333738158995
2007	Women	1788.88354	46.6688903	97.39117224478458
2008	Men	1628.3080599999998	50.0722095	96.92489334604166
2008	Women	1852.74432	46.9118566	97.46798000708485
2009	Men	1705.75848	50.1573465	97.05952823403229
2009	Women	1923.57431	47.1305046	97.54984747119023

From 2000 to 2021, the proportion of untreated diabetes cases in Egypt increased for both men and women. In **2000**, **96.18% of men** and **97.01% of women** with diabetes were untreated. By **2021**, these figures rose to **98.25% for men** and **98.33% for women**, indicating a worsening gap in diabetes treatment. Women consistently had a higher proportion of untreated cases than men throughout the years. This trend suggests increasing challenges in diabetes management and access to care, despite rising prevalence.

How has the uncertainty in diabetes prevalence estimates (AgeStd_Diabetes_18+) changed over time in Egypt, and are there significant differences between men and women?

Year	Sex	AgeStd_Diabetes_18+	Lower_Bound	Upper_Bound	Uncertainty_Range
1990	Men	1036.5290400000001	6.1363491	15.804437299999998	9.668088199999998
1990	Women	1088.09988	5.9526162000000005	17.0741367	11.121520499999999
1991	Men	1047.19193	6.415638899999999	15.779379900000002	9.363741000000003
1991	Women	1126.53087	6.515948300000001	17.1152243	10.599276
1992	Men	1060.03513	6.701342100000001	15.556948	8.8556059
1992	Women	1165.6678900000002	7.000121300000001	17.2946568	10.294535499999999
1993	Men	1074.1698	6.9848627	15.4241195	8.439256799999999
1993	Women	1205.25661	7.4708234	17.581713800000003	10.110890400000002
1994	Men	1089.9657100000002	7.1761527	15.4437743	8.267621599999998
1994	Women	1244.86531	7.9716032000000006	17.8280472	9.856444
1995	Men	1107.14559	7.3850318999999995	15.4179967	8.0329648
1995	Women	1284.66992	8.480805499999999	18.0788661	9.5980606
1996	Men	1126.1300800000001	7.642182	15.4740156	7.8318335999999995
1996	Women	1324.05064	8.9034203	18.4215797	9.518159399999998
1997	Men	1147.24512	7.8614479	15.6716656	7.810217700000001
1997	Women	1362.74213	9.3937919	18.647163	9.253371099999999
1998	Men	1170.53334	8.1818334	15.8215714	7.6397379999999995
1998	Women	1400.84934	9.8877091	18.8801804	8.9924713
1999	Men	1196.43883	8.4466804	15.984758800000002	7.538078400000002
1999	Women	1438.1023300000002	10.3700948	19.140136299999998	8.770041499999998
2000	Men	1225.4439	8.7323468	16.2341946	7.501847799999998
2000	Women	1474.9067900000002	10.8283826	19.355975	8.527592400000001

Result 9

Diabetes prevalence estimates in Egypt have become more uncertain over time, with the uncertainty range increasing steadily from 1990 to 2022 for both men and women. Women consistently have a higher uncertainty range than men, indicating less confidence in their estimates. In 1990, the uncertainty was around 9.67 for men and 11.12 for women, but by 2022, it had more than doubled to 21.21 for men and 21.54 for women. This growing uncertainty may be due to changes in data collection, diagnostic criteria, and the rising number of undiagnosed diabetes cases, especially among women.

How do crude diabetes prevalence rates (Crude_Diabetes_18+) compare to age-standardized rates (AgeStd_Diabetes_18+) in Egypt from 1990 to 2022?

Year	AgeStd_Diabetes_18+	Crude_Diabetes_18+	Difference
1990	1036.5290400000001	7.922620299999999	1028.6064197
1990	1088.09988	9.0134653	1079.0864147
1991	1047.19193	7.9946277	1039.1973023
1991	1126.53087	9.306073900000001	1117.2247961
1992	1060.03513	8.1057939	1051.9293361
1992	1165.6678900000002	9.621152400000001	1156.0467376000001
1993	1074.1698	8.231585800000001	1065.9382142
1993	1205.25661	9.9406567	1195.3159532999998
1994	1089.9657100000002	8.376609799999999	1081.5891002
1994	1244.86531	10.2620716	1234.6032384
1995	1107.14559	8.5345274	1098.6110626000002
1995	1284.66992	10.586388600000001	1274.0835314
1996	1126.1300800000001	8.7117452	1117.4183348000001
1996	1324.05064	10.9124161	1313.1382239
1997	1147.24512	8.9121662	1138.3329538
1997	1362.74213	11.2378044	1351.5043256000001
1998	1170.53334	9.130102299999999	1161.4032376999999
1998	1400.84934	11.556968300000001	1389.2923716999999
1999	1196.43883	9.3706911	1187.0681389000001
1999	1438.1023300000002	11.868746400000001	1426.2335836000002
2000	1225.4439	9.6407565	1215.8031435
2000	1474.9067900000002	12.181296399999999	1462.7254936000002

The crude diabetes prevalence rates (Crude_Diabetes_18+) in Egypt are consistently lower than the age-standardized rates (AgeStd_Diabetes_18+) from 1990 to 2022. The difference between the two rates has increased over time, indicating that an aging population is contributing significantly to the overall diabetes burden. In 1990, the difference was around 9–11, while by 2022, it had grown to over 2,600. This trend suggests that as the population ages, the prevalence of diabetes increases, making age-standardized rates a more accurate reflection of the long-term diabetes trend in Egypt.

What percentage of people with diabetes in Egypt receive treatment (AgeStd_Treated_30+), and how has this percentage changed from 1990 to 2022?

Year	Treatment_Percentage
1990	3.8320823987719623
1990	3.5856239502572143
1991	3.867389381046892
1991	3.510264898466563
1992	3.8933199034639534
1992	3.437686732539231
1993	3.9126474324636575
1993	3.368452416120747
1994	3.924402052978345
1994	3.3029250288932865
1995	3.928818647961195
1995	3.2406545410512924
1996	3.925676152794
1996	3.183377986207537
1997	3.9137774323241405
1997	3.1298398545878965
1998	3.8936264557829685
1998	3.0798532981426825
1999	3.8642855397797478
1999	3.0335102162027643
2000	3.8240644798182934
2000	2.9894658224469897

The percentage of people with diabetes in Egypt receiving treatment (AgeStd_Treated_30+) has steadily declined from 1990 to 2022. In 1990, treatment coverage was around 3.8–3.5%, but by 2022, it had dropped to approximately 1.69–1.63%. This suggests a significant decrease in access to or uptake of diabetes treatment over time, despite the increasing prevalence of the disease. The trend highlights potential challenges in healthcare accessibility, affordability, or awareness regarding diabetes management in Egypt.

year with the highest and lowest diabetes prevalence.

Year	Prevalence	Type
2022	2879.2492500000003	Highest
1990	1036.5290400000001	Lowest

The year with the highest diabetes prevalence in Egypt was **2022**, with an age-standardized rate of **2879.25** per 100,000 people. The year with the lowest prevalence was **1990**, with a rate of **1036.53** per 100,000 people. This shows a significant increase in diabetes cases over the years.

Compare treatment rates over the years.

Year	Avg_Treatment_Rate
1990	39.1181322
1991	39.626504999999995
1992	40.145469199999994
1993	40.65948275
1994	41.16654575
1995	41.6656225
1996	42.171512549999996
1997	42.67311235
1998	43.166086
1999	43.6449608
2000	44.1087774
2001	44.55408065
2002	44.98721115
2003	45.39734255
2004	45.7681242
2005	46.08401705
2006	46.344930700000006
2007	46.557844450000005
2008	46.7265649
2009	46.84992505
2010	46.925805
2011	46.93723525

Diabetes treatment rates in Egypt increased steadily from **1990 (39.12%) to 2011 (46.94%)**, showing better healthcare access. However, after 2011, the rates **gradually declined**, reaching **43.67% in 2022**. This drop may indicate challenges in healthcare access, affordability, or policy changes affecting diabetes management.

Check if treatment rates increase when prevalence is higher (Calculate Average Prevalence and Treatment Rate for Each Year)

Year	Avg_Diabetes_Prevalence	Avg_Treatment_Rate
1990	8.4680428	39.1181322
1991	8.6503508	39.626504999999995
1992	8.86347315	40.145469199999994
1993	9.086121250000001	40.65948275
1994	9.3193407	41.16654575
1995	9.560458	41.6656225
1996	9.812080649999999	42.171512549999996
1997	10.0749853	42.67311235
1998	10.3435353	43.166086
1999	10.61971875	43.6449608
2000	10.91102645	44.1087774
2001	11.22124155	44.55408065
2002	11.55382135	44.98721115
2003	11.91821435	45.39734255
2004	12.323630399999999	45.7681242
2005	12.784898499999999	46.08401705
2006	13.3083104	46.344930700000006
2007	13.901500300000002	46.557844450000005
2008	14.56895785	46.7265649

Result 15

The data shows that **diabetes prevalence in Egypt has steadily increased** from **8.47% in 1990 to 25.60% in 2022**. Meanwhile, the **average treatment rate also increased initially**, peaking around 2011 at **46.94%**, but then **started to decline** gradually, reaching **43.67% in 2022**. This suggests that while more people are developing diabetes, the percentage receiving treatment has not kept pace in recent years.

Compute Overall Correlation Between Prevalence and Treatment Rate

Correlation_Coefficient
0.4439466700283673

The correlation coefficient between diabetes prevalence and treatment rates in Egypt is **0.44**. This indicates a **moderate positive relationship**, meaning that as diabetes prevalence increases, treatment rates also tend to rise, but not in a

perfectly strong way. Other factors may also influence treatment rates, such as healthcare policies, accessibility, and economic conditions.

Compute Correlation by Gender

	Sex	Correlation_Coefficient
	Men	0.21334323314216272
	Women	0.7872184691953432

The correlation analysis by gender shows that **women (0.79) have a much stronger positive correlation** between diabetes prevalence and treatment rates compared to **men (0.21)**. This suggests that as diabetes prevalence rises, women are more likely to receive treatment, whereas for men, the relationship is weaker, indicating potential gaps in treatment access or healthcare-seeking behavior among men.

python

read data

	Country	ISO	Sex	Year	AgeStd_Diabetes_18+	AgeStd_Diab_L95_18+	AgeStd_Diab_L95_v2_18+	AgeStd_Treated_30+	AgeStd_Treat_L95_30+	AgeStd_Treat_U95_30+	Crude_Diabetes_18+	Crude
0	Egypt	EGY	Men	1990	1036.52904	6.136349	15.804437	39.720647	23.018557	58.712235	7.922620	
1	Egypt	EGY	Men	1991	1047.19193	6.415639	15.779380	40.498990	24.125250	58.743690	7.994628	
2	Egypt	EGY	Men	1992	1060.03513	6.701342	15.556948	41.270559	25.390949	58.543980	8.105794	
3	Egypt	EGY	Men	1993	1074.16980	6.984863	15.424119	42.028477	26.948754	58.441026	8.231586	
4	Egypt	EGY	Men	1994	1089.96571	7.176153	15.443774	42.774637	28.105203	58.551345	8.376610	

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AgeStd_Treat_U95_30+	0.0
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Crude_Diab_U95_18+	0.0
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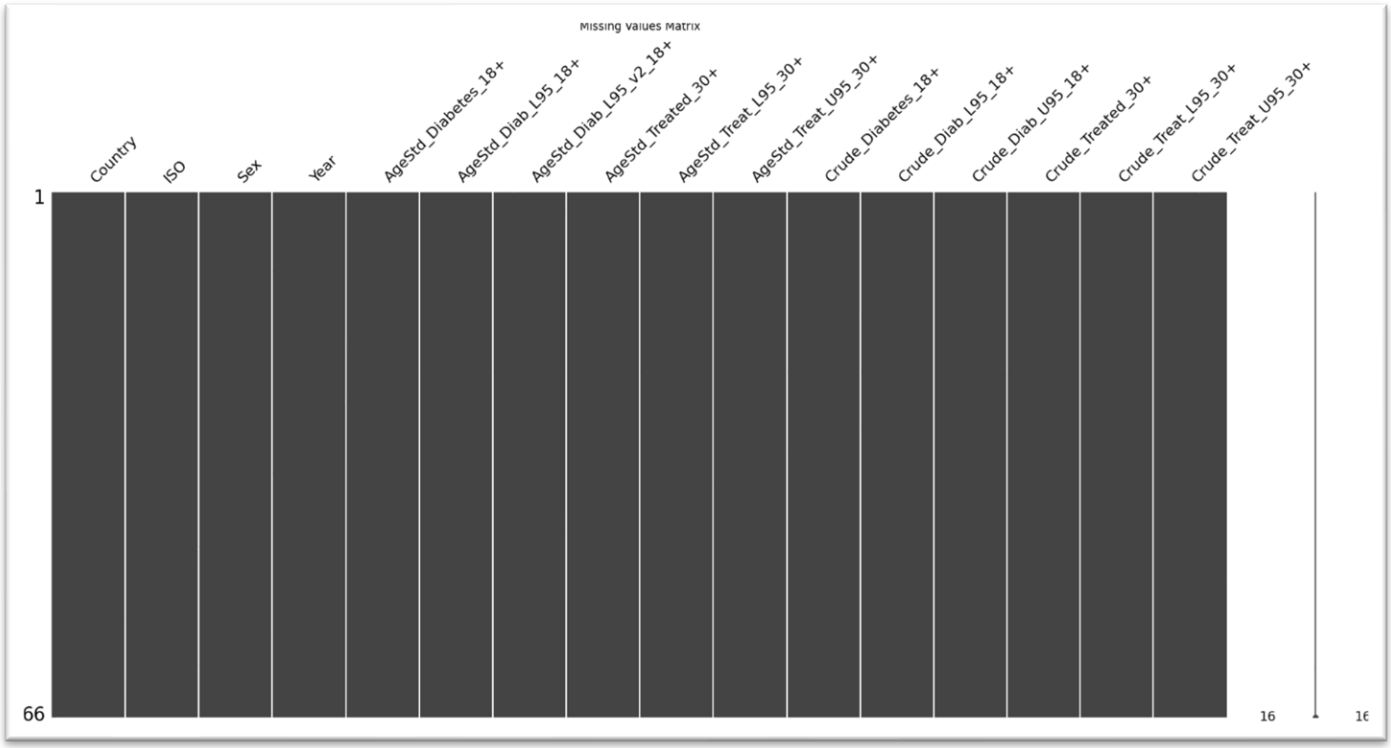

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 6   AgeStd_Diab_L95_v2_18+ 66 non-null     float64
 7   AgeStd_Treated_30+     66 non-null     float64
 8   AgeStd_Treat_L95_30+   66 non-null     float64
 9   AgeStd_Treat_U95_30+   66 non-null     float64
 10  Crude_Diabetes_18+     66 non-null     float64
 11  Crude_Diab_L95_18+     66 non-null     float64
 12  Crude_Diab_U95_18+     66 non-null     float64
 13  Crude_Treated_30+      66 non-null     float64
 14  Crude_Treat_L95_30+    66 non-null     float64
 15  Crude_Treat_U95_30+    66 non-null     float64
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Duplicate

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statistical measure

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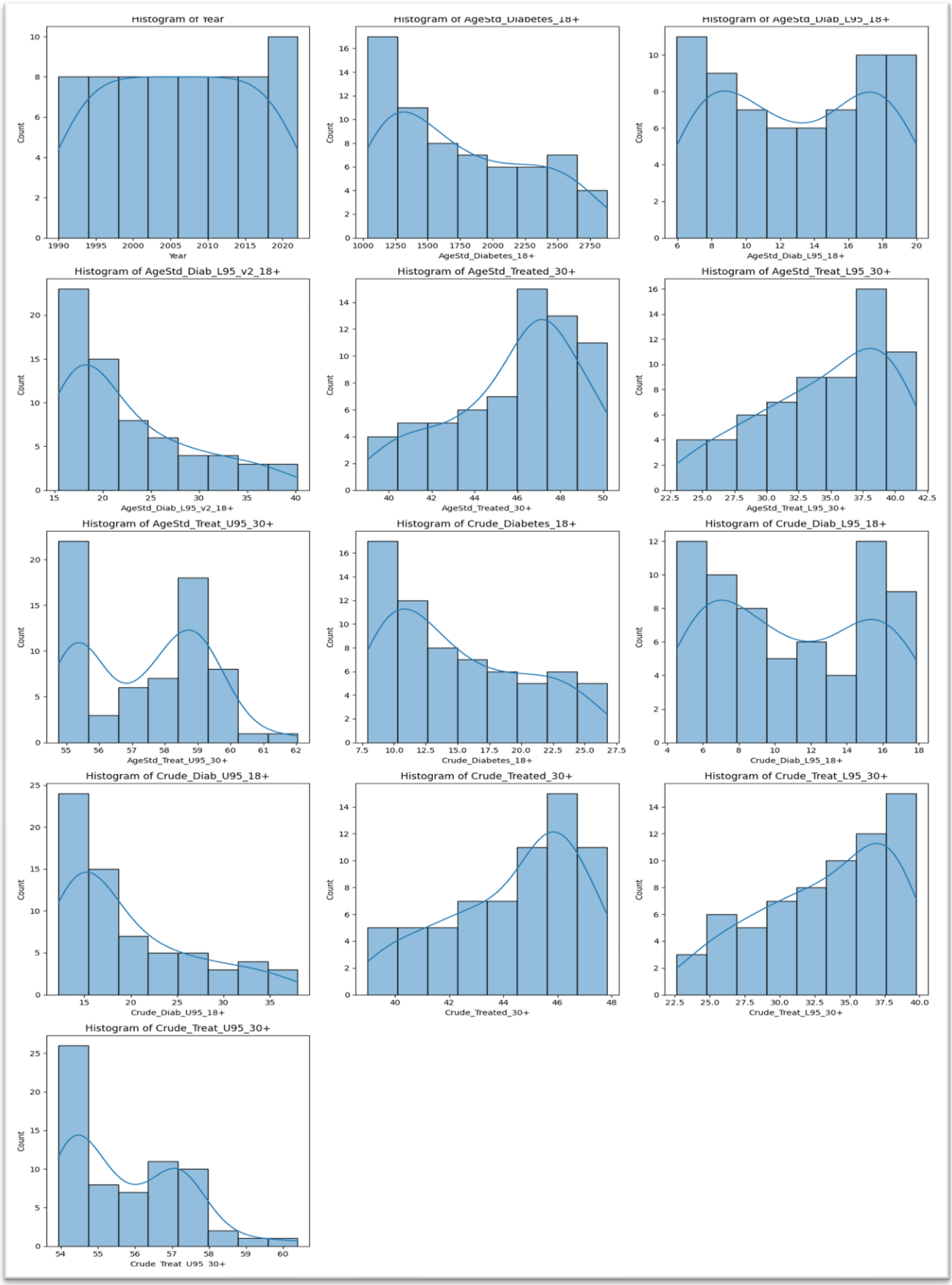
AgeStd_Diabetes_18+	66.0	1751.859534	547.889596	1036.529040	1264.663033	1630.197185	2214.462208	2879.249250
AgeStd_Diab_L95_18+	66.0	12.994183	4.510211	5.952616	8.775115	12.867067	17.175021	19.959260
AgeStd_Diab_L95_v2_18+	66.0	22.617216	6.716619	15.417997	17.335021	20.156436	26.464334	40.231389
AgeStd_Treated_30+	66.0	45.882367	3.011998	39.015170	44.120931	46.816190	47.671807	50.171416
AgeStd_Treat_L95_30+	66.0	34.532382	5.136334	23.018557	30.808964	35.543696	38.716687	41.627865
AgeStd_Treat_U95_30+	66.0	57.423373	1.845119	54.757226	55.432588	57.651367	58.897114	62.043200
Crude_Diabetes_18+	66.0	15.000591	5.529359	7.922620	10.266597	13.526945	19.409313	26.733137
Crude_Diab_L95_18+	66.0	10.960903	4.351620	4.538051	6.910314	10.515684	15.222261	17.846227
Crude_Diab_U95_18+	66.0	19.643543	6.993125	12.220487	14.449807	16.928717	23.566113	37.962187
Crude_Treated_30+	66.0	44.384895	2.470025	38.988317	42.584010	45.126291	46.202507	47.826786
Crude_Treat_L95_30+	66.0	33.309091	4.744979	22.642864	30.016246	34.177280	37.552864	39.748838
Crude_Treat_U95_30+	66.0	55.756455	1.543721	53.930791	54.416643	55.364339	57.082639	60.394216

What are the distributions of the numerical variables in the dataset?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Count
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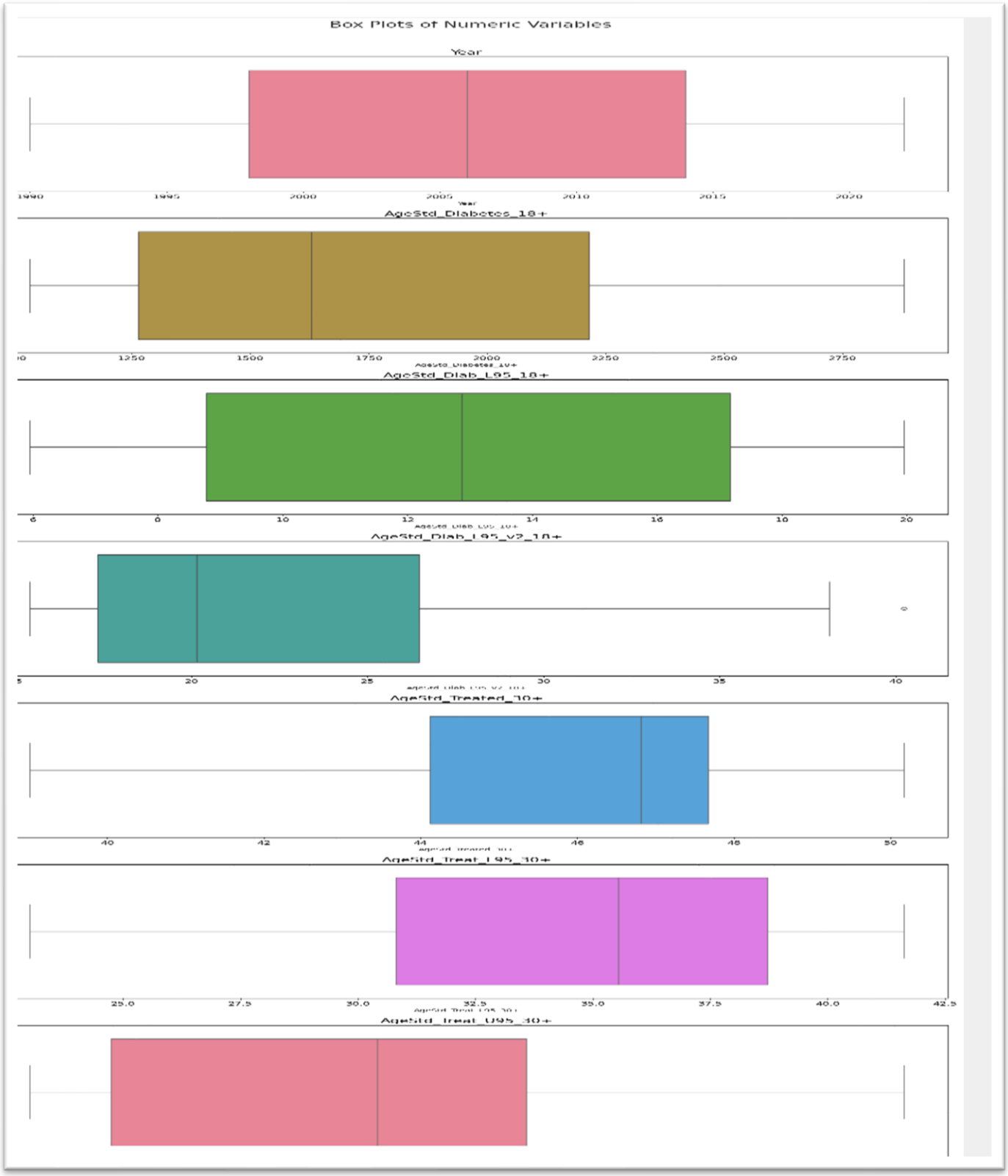
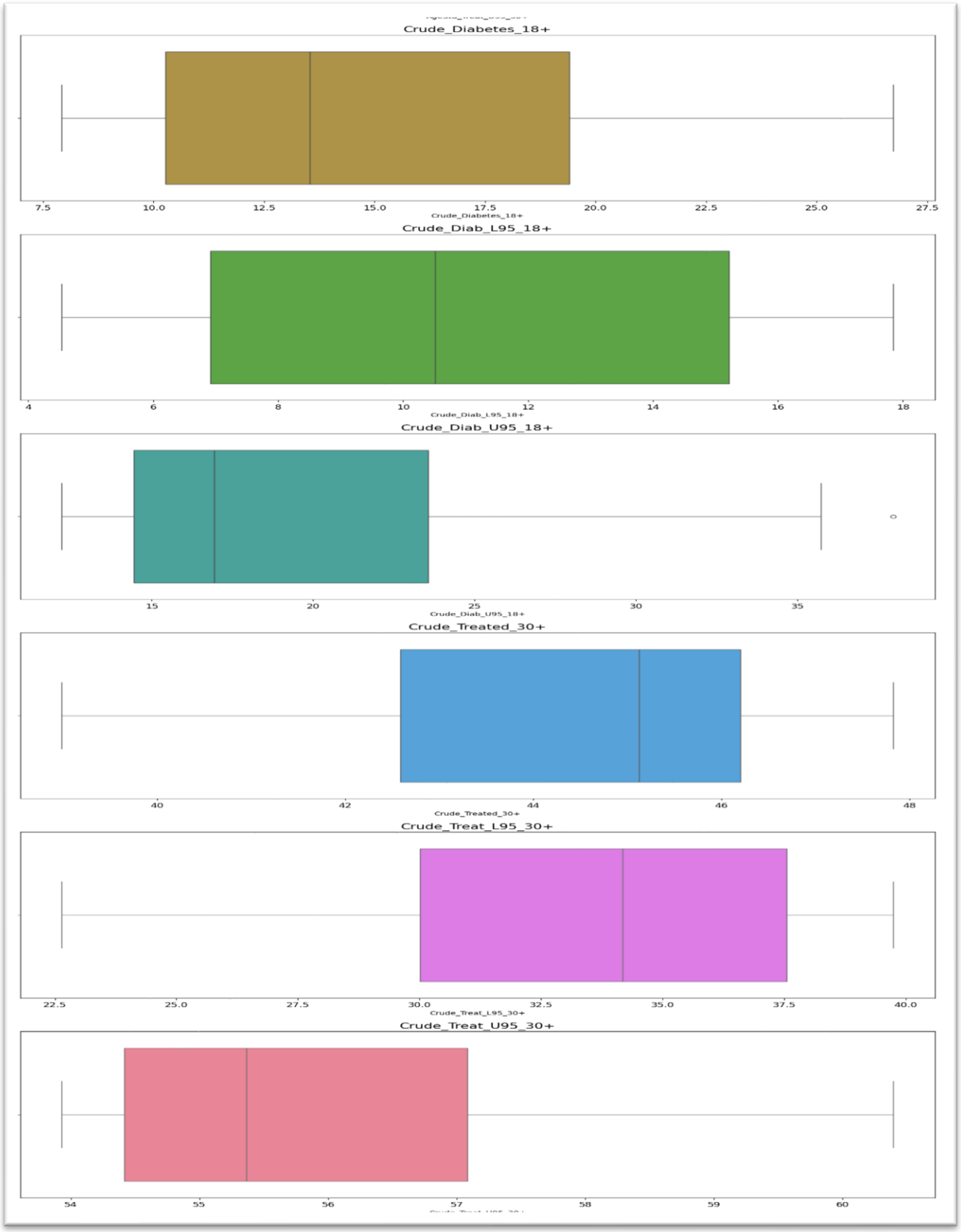
AgeStd_Diab_L95_18+
Count
Histogram of AgeStd_Diab_L95_v2_18+
AgeStd_Diab_L95_v2_18+
Count
Histogram of AgeStd_Treated_30+
AgeStd_Treated_30+
Count
Histogram of AgeStd_Treat_L95_30+
AgeStd_Treat_L95_30+
Count
Histogram of AgeStd_Treat_U95_30+
AgeStd_Treat_U95_30+
Count
Histogram of Crude_Diabetes_18+
Crude_Diabetes_18+
Count
Histogram of Crude_Diab_L95_18+
Crude_Diab_L95_18+
Count
Histogram of Crude_Diab_U95_18+
Crude_Diab_U95_18+
Count
Histogram of Crude_Treated_30+
Crude_Treated_30+
Count
Histogram of Crude_Treat_L95_30+
Crude_Treat_L95_30+
Count
Histogram of Crude_Treat_U95_30+
Crude_Treat_U95_30+
Count

check outlier




Crude_Diabetes_18+
7.5
10.0
12.5
15.0
17.5
20.0
22.5
25.0
27.5
Crude_Diabetes_18+
Crude_Diab_L95_18+
4
6
8
10
12
14
16
18
Crude_Diab_L95_18+
Crude_Diab_U95_18+
15
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25
30
35
Crude_Diab_U95_18+
Crude_Treated_30+
40
42
44
46
48
Crude_Treated_30+
Crude_Treat_L95_30+
22.5
25.0
27.5
30.0
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35.0
37.5
40.0
Crude_Treat_L95_30+
Crude_Treat_U95_30+
54
55
56
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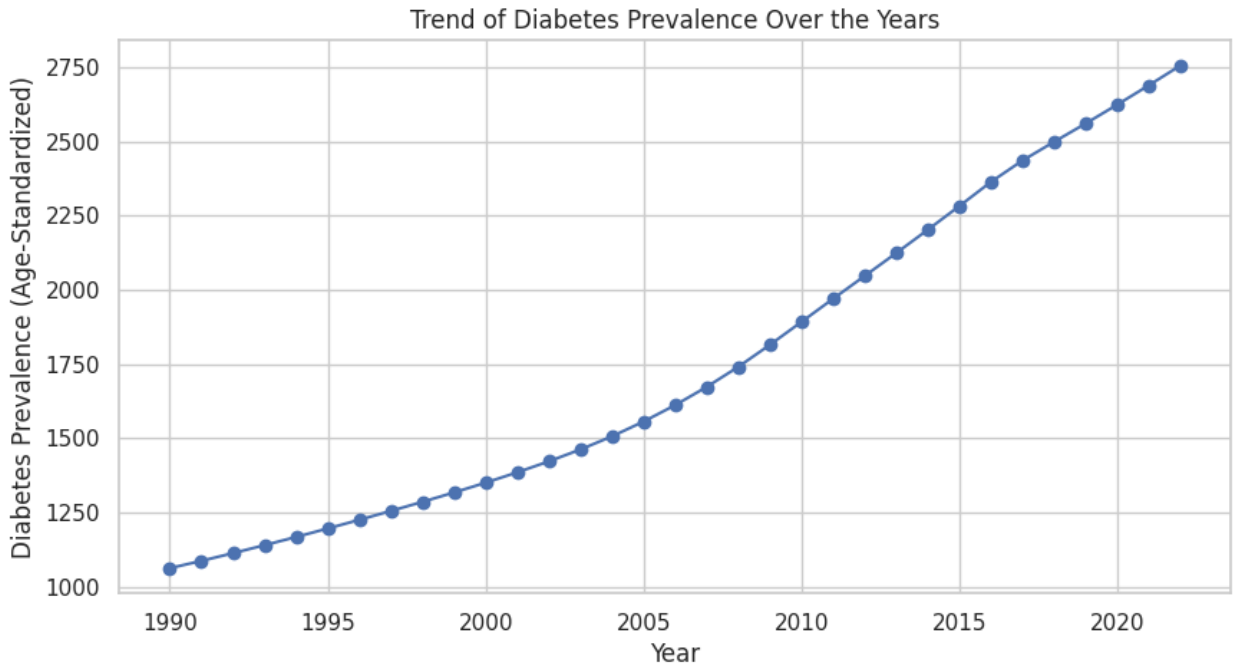
58
59
60

No outlier

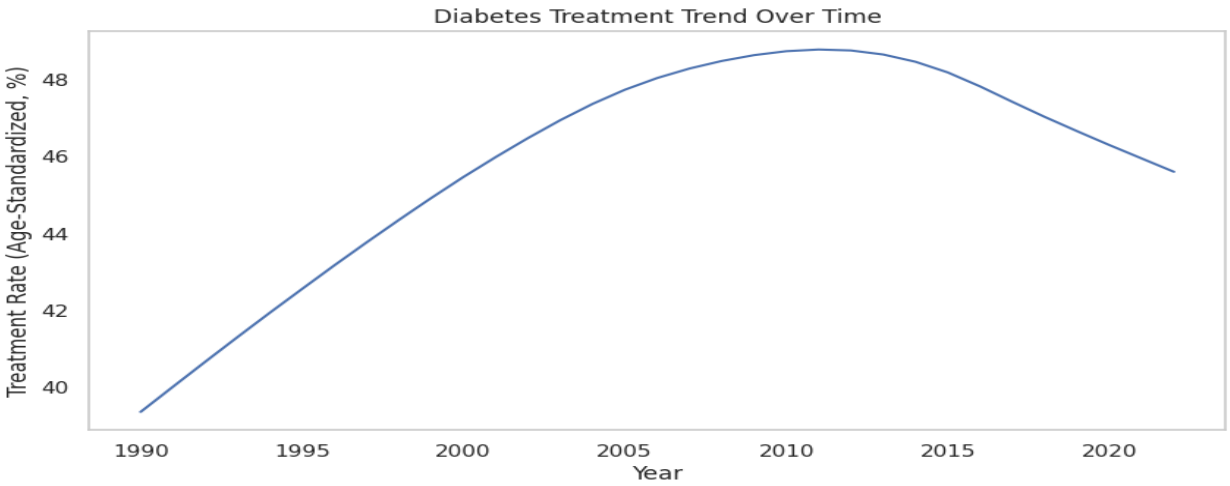
Trends Over Time

How has diabetes prevalence changed over the years?



The graph illustrates the **rising trend of diabetes prevalence in Egypt** from 1990 to 2022, showing a continuous and significant increase over the years. This upward trajectory suggests worsening public health concerns, potentially driven by factors such as **lifestyle changes, increased obesity rates, dietary habits, and genetic predisposition**. The steady rise highlights the urgent need for **preventive measures, public health awareness campaigns, and improved access to diabetes management and early intervention programs**. Without proactive healthcare strategies, the increasing prevalence could lead to a higher burden on the healthcare system and an escalation in diabetes-related complications.

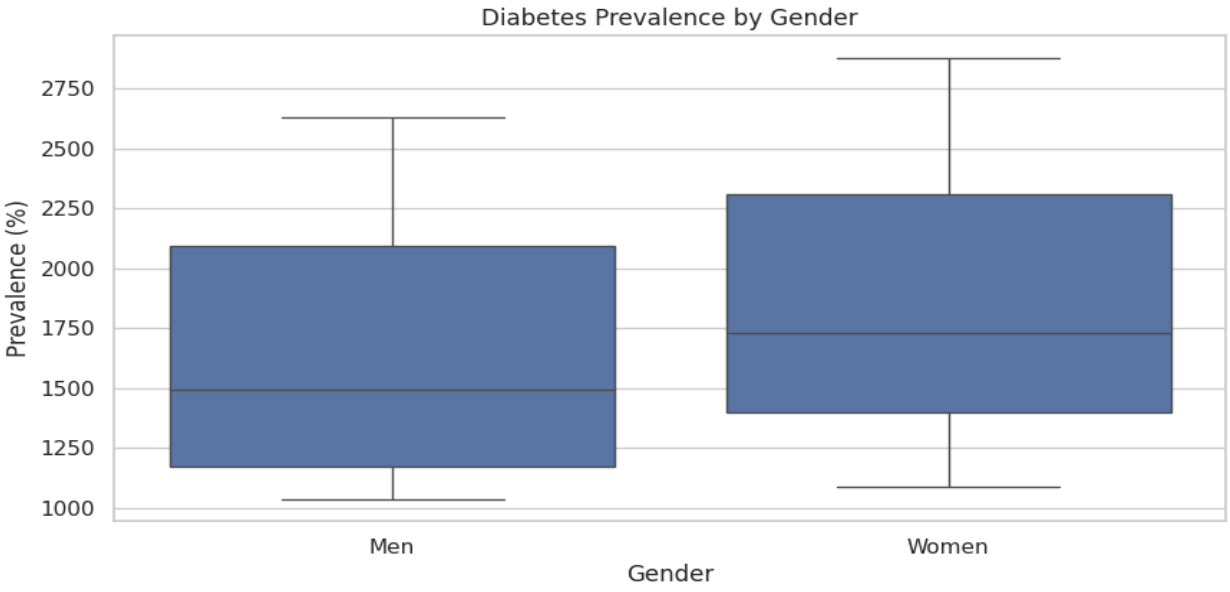
What is the trend in diabetes treatment over time?

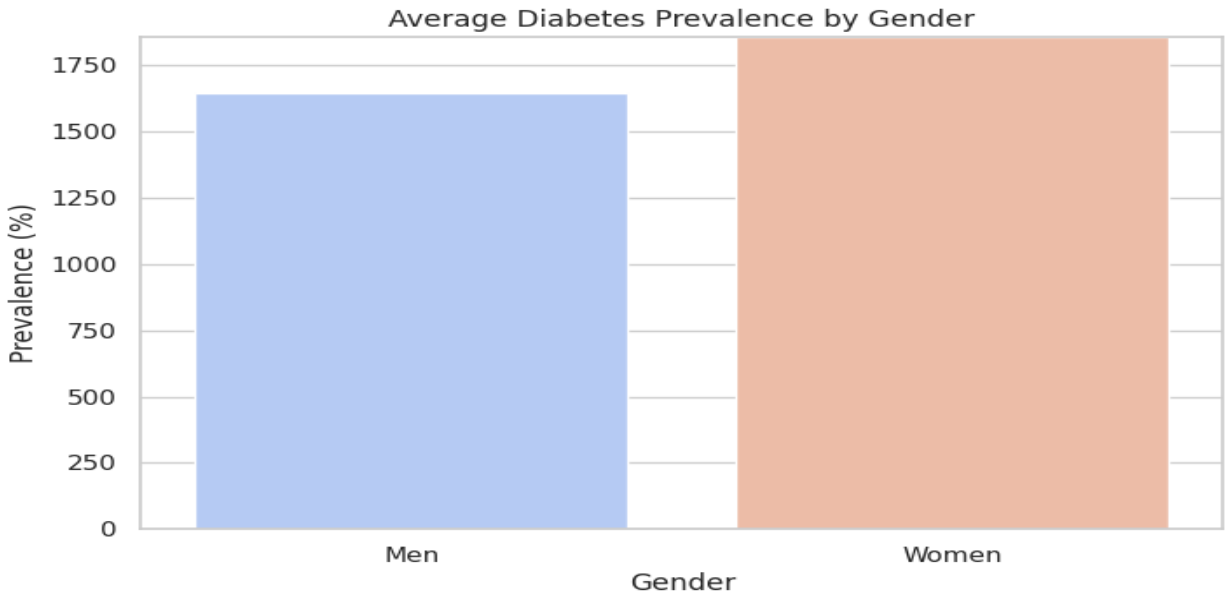


The graph shows the trend of diabetes treatment rates in Egypt from 1990 to 2022, showing a steady increase until around 2010, followed by a noticeable decline. This pattern suggests potential challenges such as reduced healthcare accessibility, policy changes affecting treatment availability, and declining patient adherence due to financial or lifestyle barriers. The decreasing treatment rate is concerning, as untreated diabetes can lead to severe complications, including cardiovascular disease and kidney failure. Addressing this issue requires improved healthcare policies, better treatment accessibility, and increased awareness to ensure patients receive the necessary care.

2 Gender-Based Analysis

Do men and women have different diabetes prevalence rates?



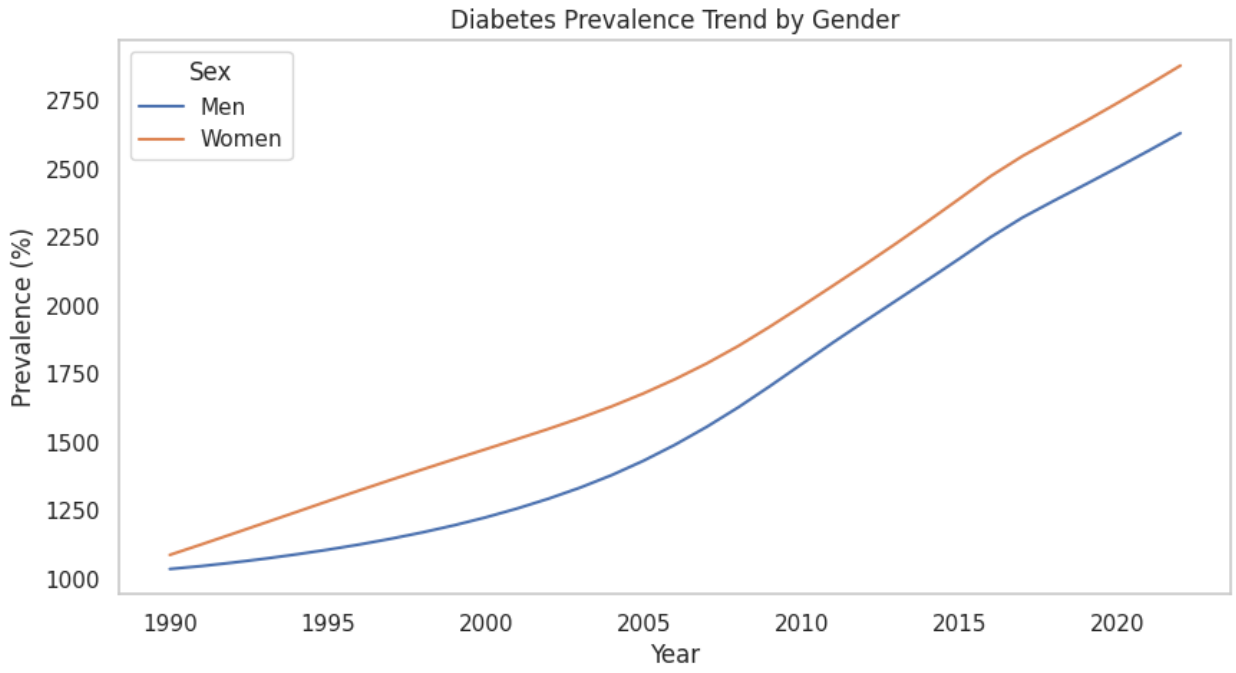


This graph shows the **rising diabetes prevalence over time** in Egypt from 1990 to 2022, with a consistent increase among both men and women. The higher prevalence in women suggests potential **biological, lifestyle, or socioeconomic factors** influencing diabetes risk. The overall trend is concerning, indicating a growing public health challenge that could be linked to **changes in diet, physical inactivity, urbanization, and healthcare accessibility**.

The widening gap between genders and the steady increase highlight the urgency for **targeted prevention strategies, improved healthcare interventions, and**

awareness campaigns to address the **root causes of rising diabetes rates**. Strengthening early detection, promoting healthy lifestyles, and ensuring equitable healthcare access are essential to mitigating the long-term impact of diabetes.

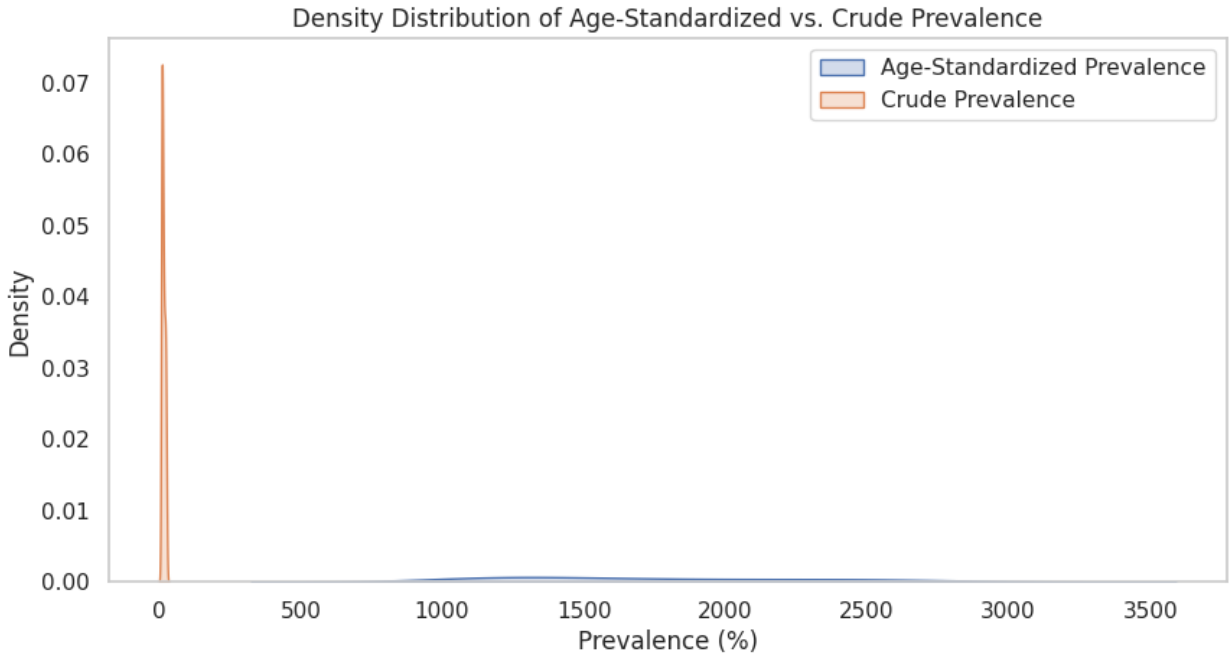
Has the gender gap in diabetes prevalence changed over time?



The graph shows a **higher diabetes prevalence among women than men** in Egypt from 1990 to 2022, with the gap widening over time. The sharp rise in cases, especially after 2005, suggests factors like **lifestyle changes, obesity, and healthcare disparities**. Women may face **additional risks or barriers to treatment**, highlighting the need for **gender-sensitive healthcare policies, better screening, and awareness programs** to address the growing diabetes burden.

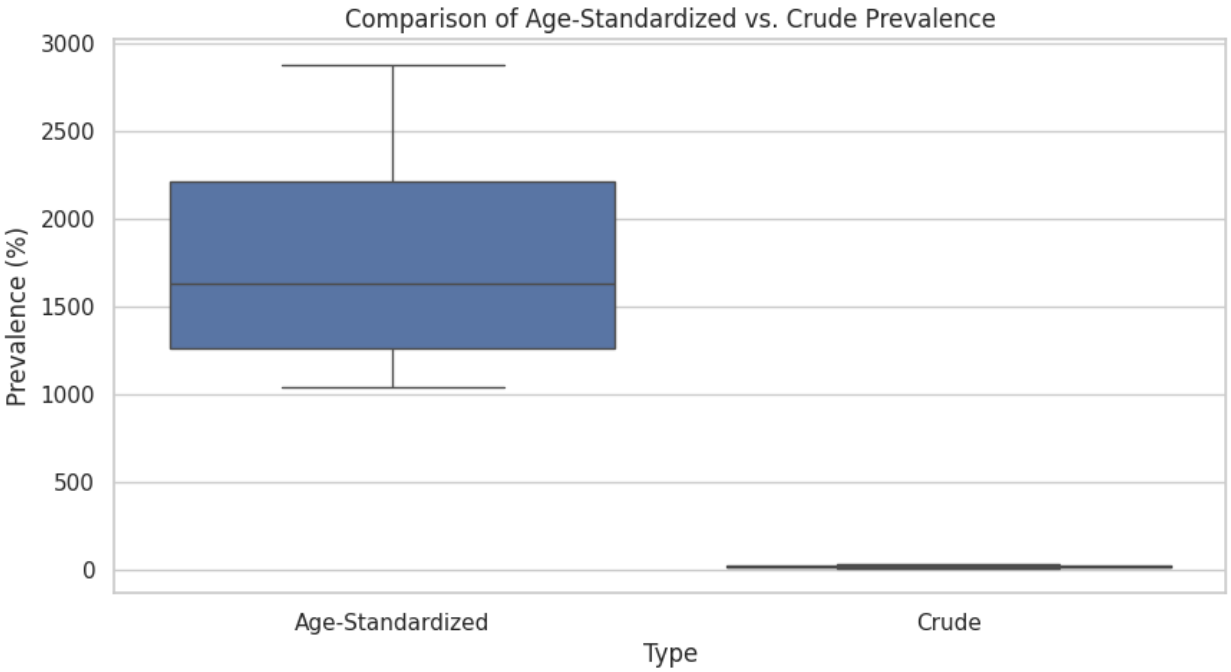
3 Age-Standardized vs. Crude Prevalence

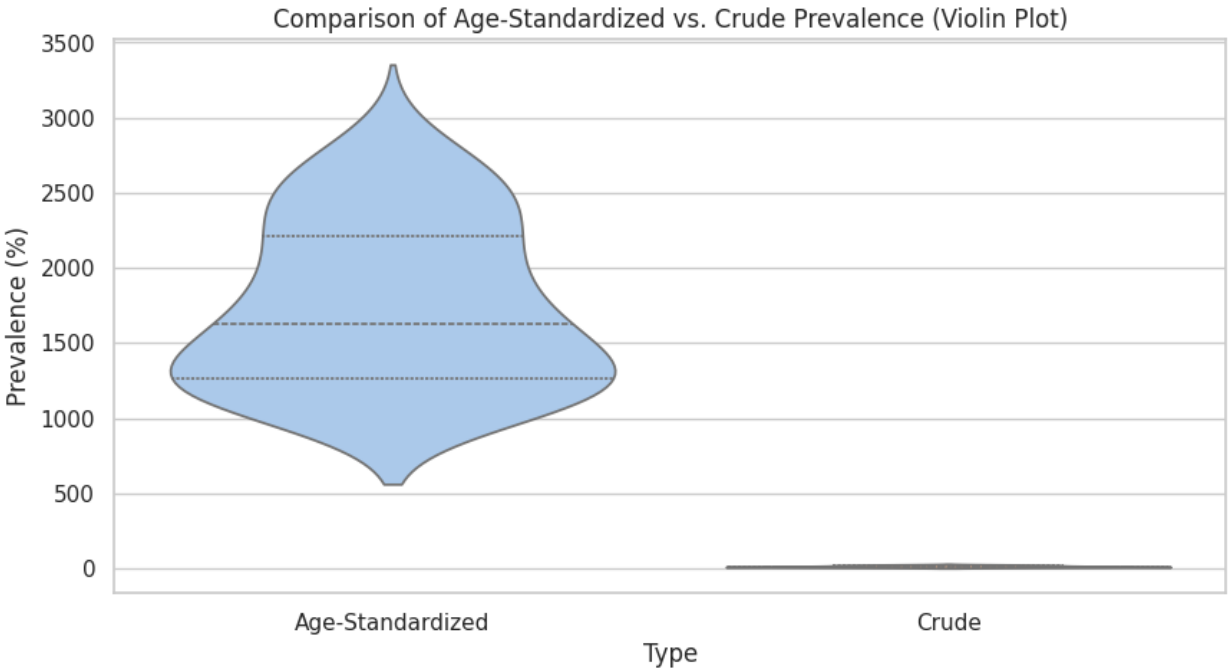
Density Distribution of Age-Standardized vs. Crude Prevalence



This graph illustrates the **density distribution of age-standardized vs. crude prevalence** of diabetes in Egypt. The crude prevalence is tightly concentrated around lower values, while the age-standardized prevalence is more widely spread, indicating that **diabetes prevalence increases significantly with age**. The stark difference suggests that using crude prevalence alone may **underestimate the true burden of diabetes**, potentially leading to insufficient healthcare planning. This emphasizes the need for **age-standardized measures** to accurately assess diabetes prevalence and ensure better-targeted healthcare policies and resource allocation.

Age-Standardized vs. Crude Prevalence



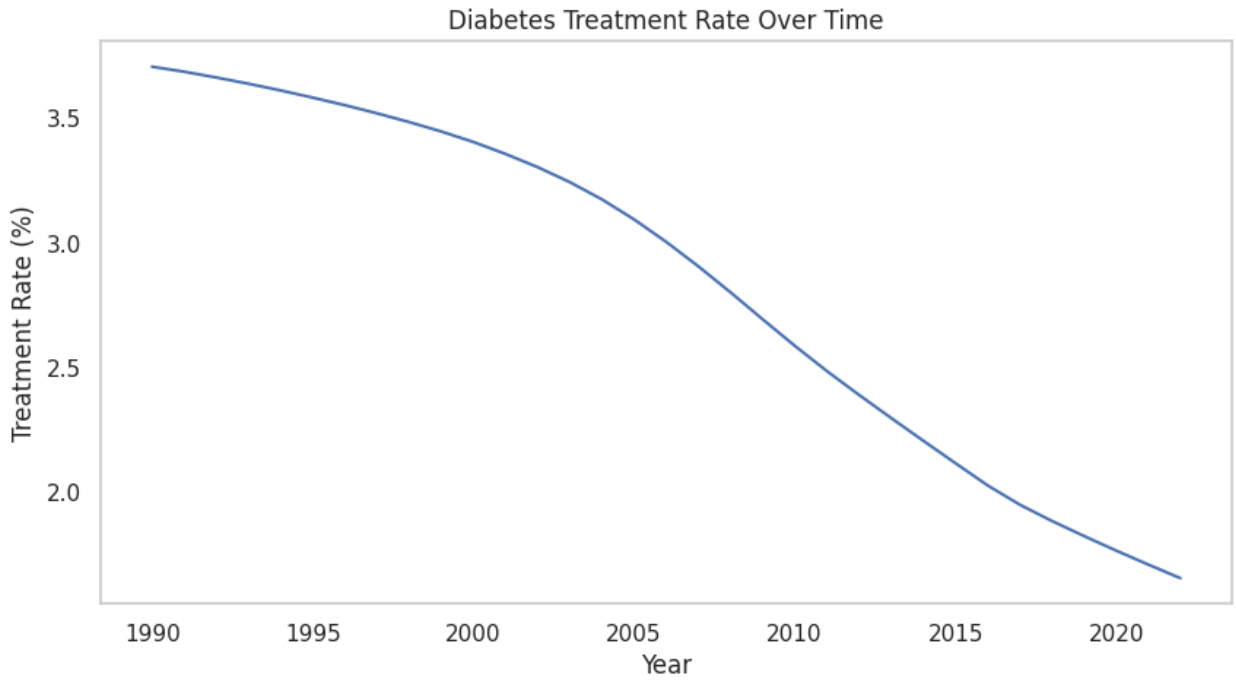


The violin and box plots compare **age-standardized diabetes prevalence** to **crude prevalence**. The age-standardized values show a much broader distribution and significantly higher prevalence rates, suggesting that **aging populations contribute significantly to diabetes prevalence**. The crude prevalence, in contrast, remains relatively low, indicating that younger age groups may have lower diabetes rates.

This emphasizes the importance of **age-specific healthcare policies, early screening programs, and interventions targeting older adults** to manage the disease effectively.

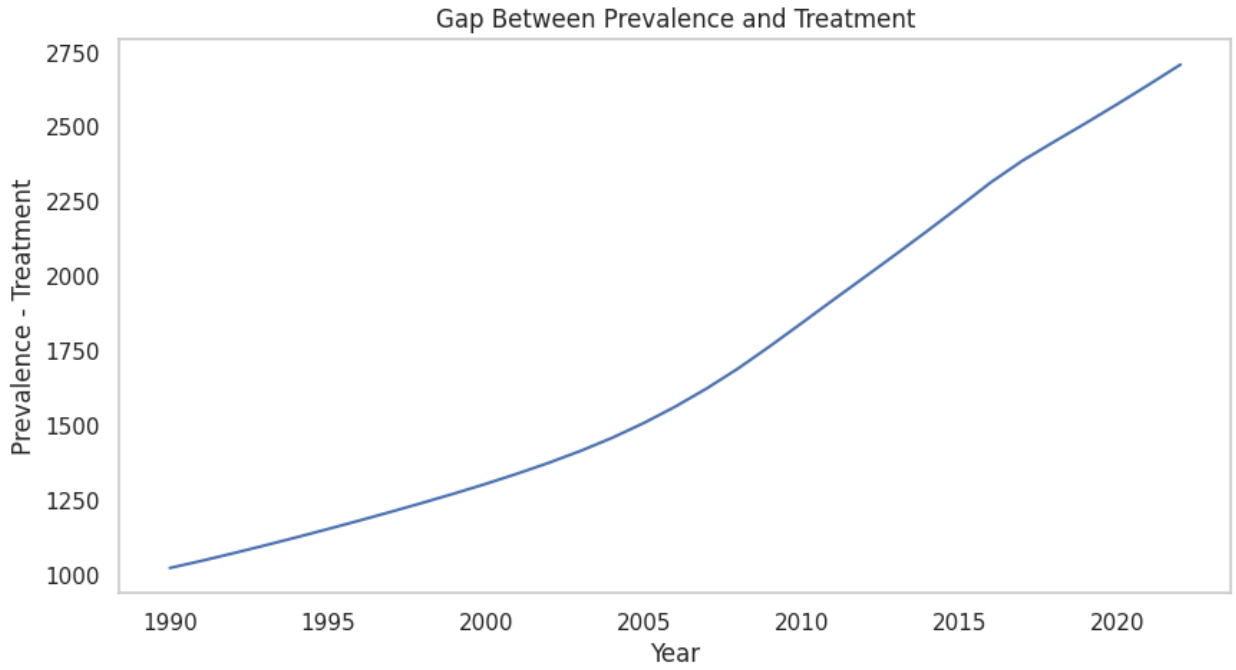
Diabetes Treatment Effectiveness

What percentage of people with diabetes receive treatment?



This graph illustrates the **declining diabetes treatment rate over time** in Egypt from 1990 to 2022. The steady decrease suggests potential issues such as **reduced access to healthcare, lower treatment adherence, or systemic barriers** preventing people from receiving proper care. This trend is concerning, as untreated diabetes can lead to severe complications, highlighting the need for **improved healthcare policies, awareness campaigns, and better treatment accessibility**.

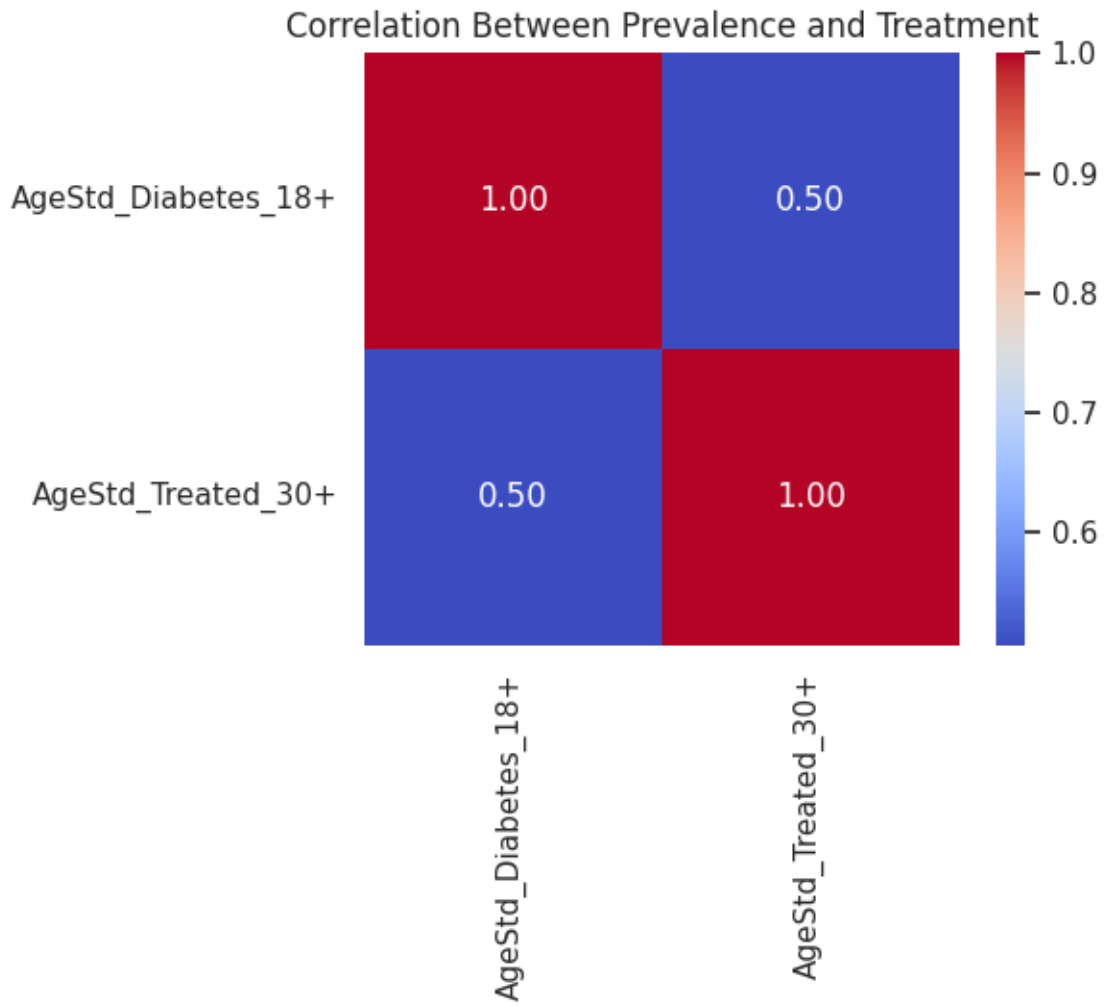
Is there a gap between prevalence and treatment rates?



This graph visualizes the **gap between diabetes prevalence and treatment rates** in Egypt from 1990 to 2022. The increasing trend indicates that while diabetes prevalence is rising, the proportion of people receiving treatment is not keeping pace. The widening gap suggests potential challenges such as **limited healthcare access, lack of awareness, or financial constraints**. Addressing these barriers is crucial for improving diabetes management and reducing complications in affected populations.

Correlation & Predictive Analysis

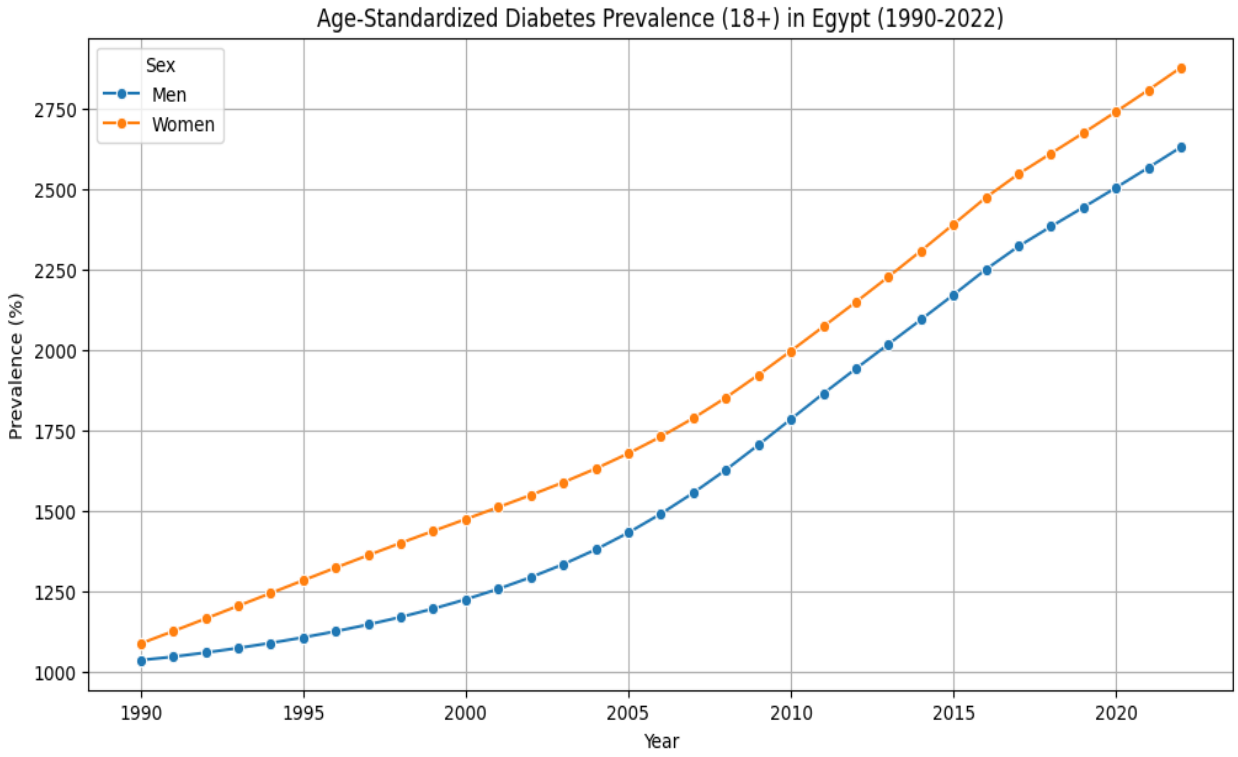
Is there a correlation between prevalence and treatment?



This heatmap illustrates the correlation between diabetes prevalence (Age-Standardized for individuals 18+) and the percentage of people receiving treatment (Age-Standardized for individuals 30+). The correlation coefficient between these two variables is **0.50**, indicating a moderate positive correlation. This suggests that as diabetes prevalence increases, treatment rates also tend to rise, but not proportionally. Factors such as healthcare accessibility, socioeconomic barriers, or policy interventions might be affecting treatment uptake despite rising prevalence. Addressing these gaps could improve diabetes management in Egypt.

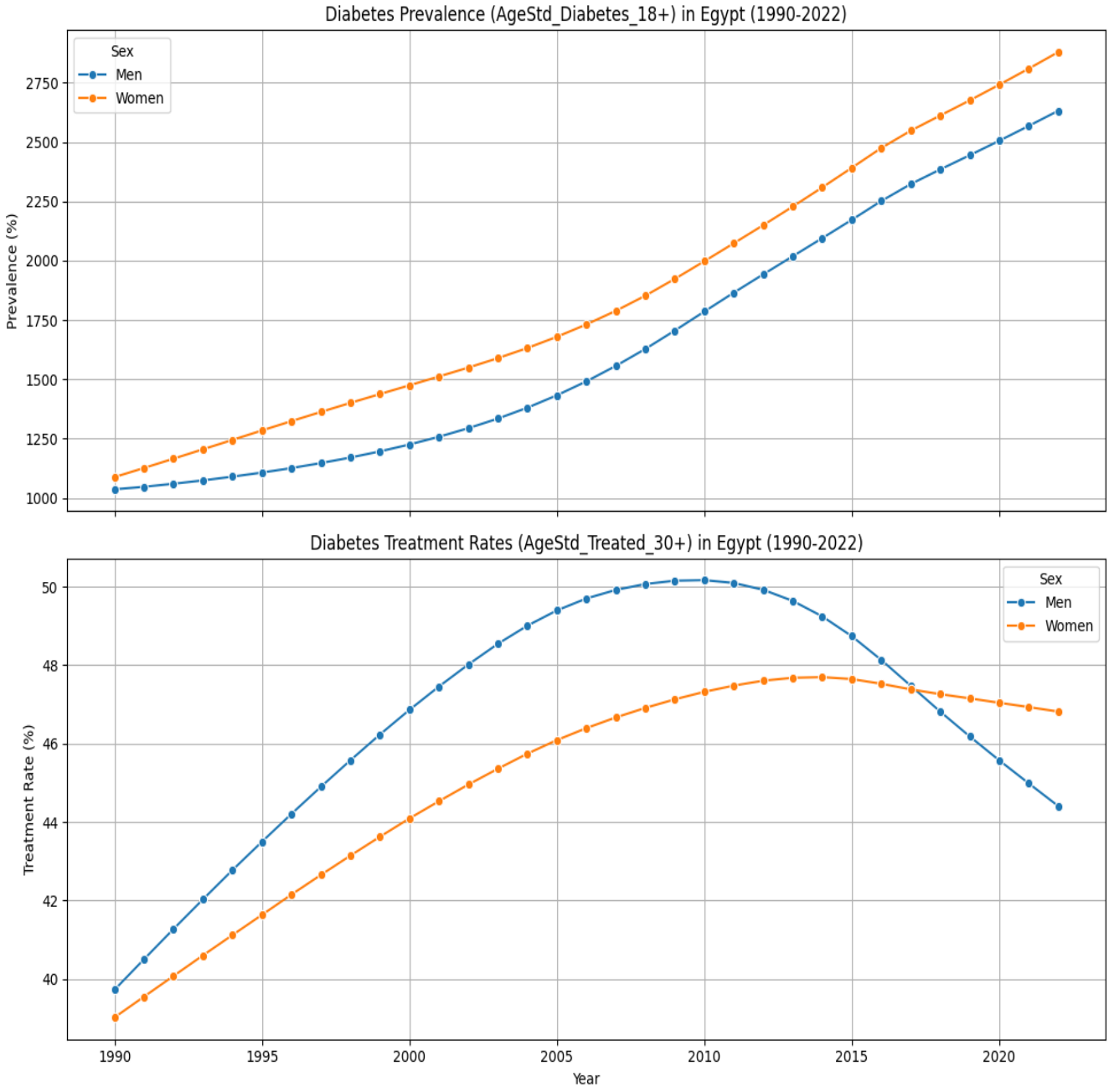
other question

How has the age-standardized prevalence of diabetes (AgeStd_Diabetes_18+) in Egypt changed from 1990 to 2022, and what are the differences between men and women?



Diabetes prevalence in Egypt has steadily increased from 1990 to 2022 for both men and women, with women consistently having higher rates. The rise became steeper after 2005, possibly due to lifestyle changes and urbanization. The gap between men and women remains, highlighting potential gender-related factors. This trend emphasizes the need for better diabetes prevention and management efforts.

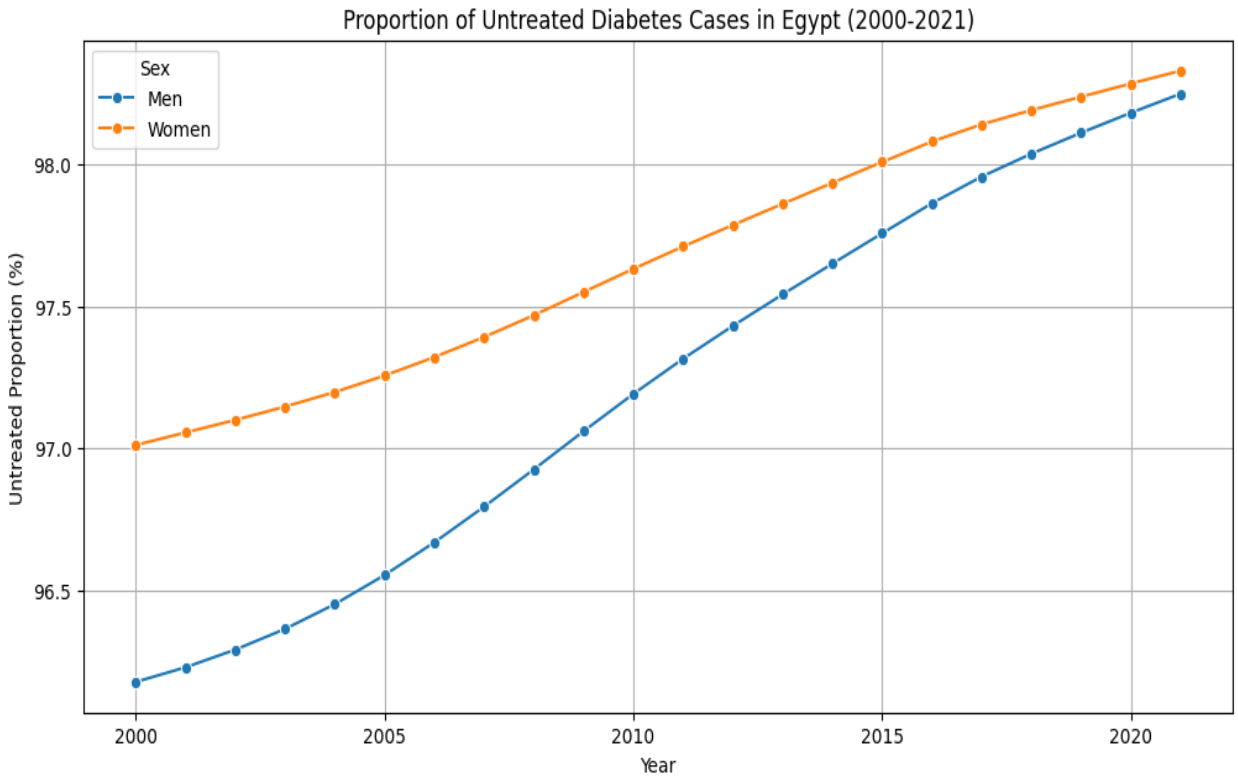
What are the differences in diabetes prevalence (AgeStd_Diabetes_18+) and treatment rates (AgeStd_Treated_30+) between men and women in Egypt from 1990 to 2022?



The charts show diabetes prevalence and treatment rates in Egypt from 1990 to 2022 for men and women. Diabetes prevalence has consistently increased for both genders, with women having higher rates. However, treatment rates followed a different trend—rising until around 2005-2010, then declining for men while stabilizing for women. This suggests that despite rising diabetes cases, treatment coverage has not kept pace, especially for men. The decline in treatment rates may indicate barriers to healthcare access, changes in treatment adherence, or

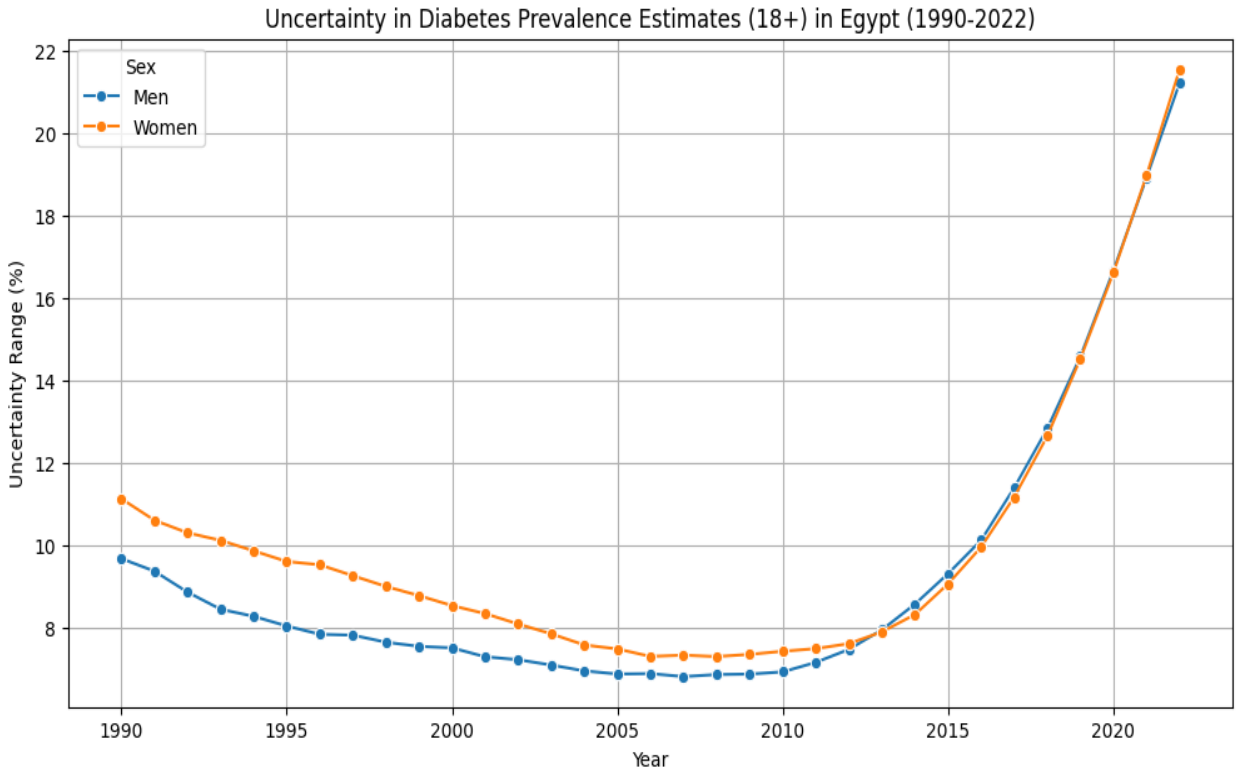
limitations in healthcare infrastructure. Addressing these gaps is crucial for effective diabetes management.

What proportion of people with diabetes in Egypt remain untreated, and how has this proportion changed from 2000 to 2021?



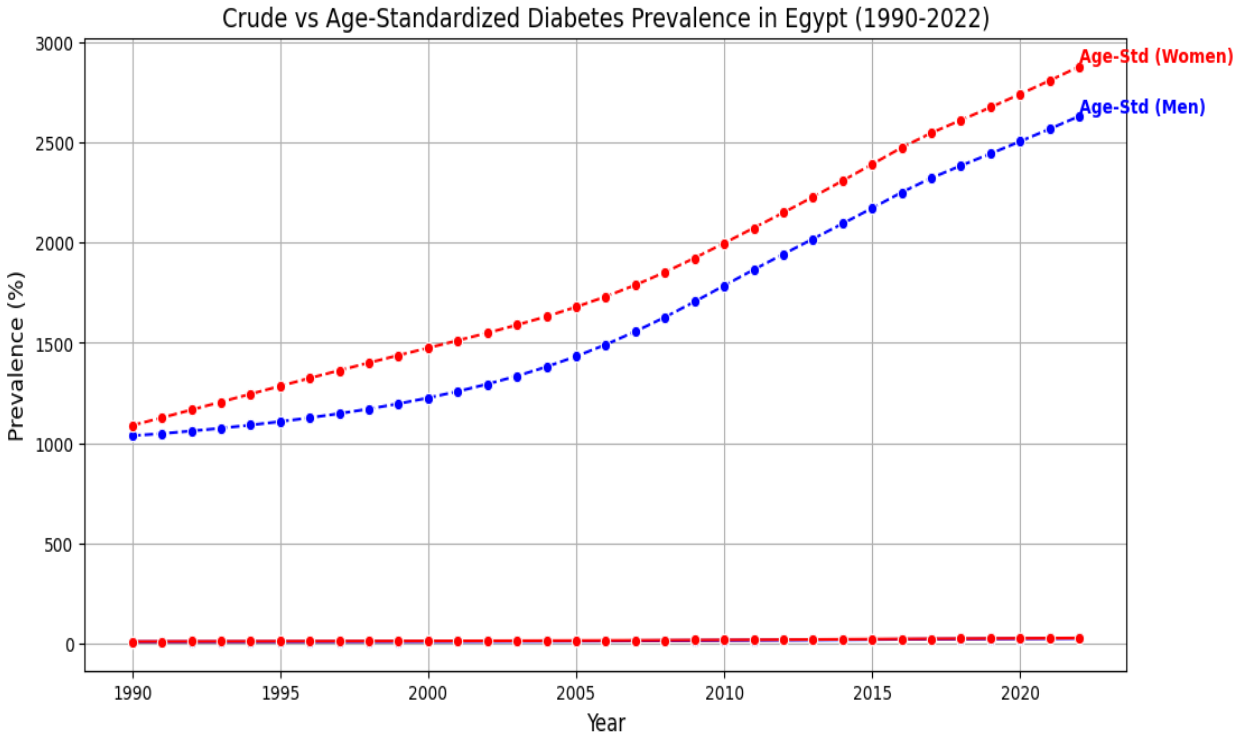
The chart show the rising proportion of untreated diabetes cases in Egypt from 2000 to 2021 for both men and women. Over the years, the percentage of untreated cases has steadily increased, with women consistently having a slightly higher proportion than men. This trend indicates a growing gap in diabetes management, suggesting possible issues such as limited healthcare access, financial constraints, or lack of awareness. The increasing number of untreated cases is concerning, as it can lead to severe health complications and a higher burden on the healthcare system. Addressing these challenges is crucial to improving diabetes care and reducing health risks.

How has the uncertainty in diabetes prevalence estimates (AgeStd_Diabetes_18+) changed over time in Egypt, and are there significant differences between men and women?



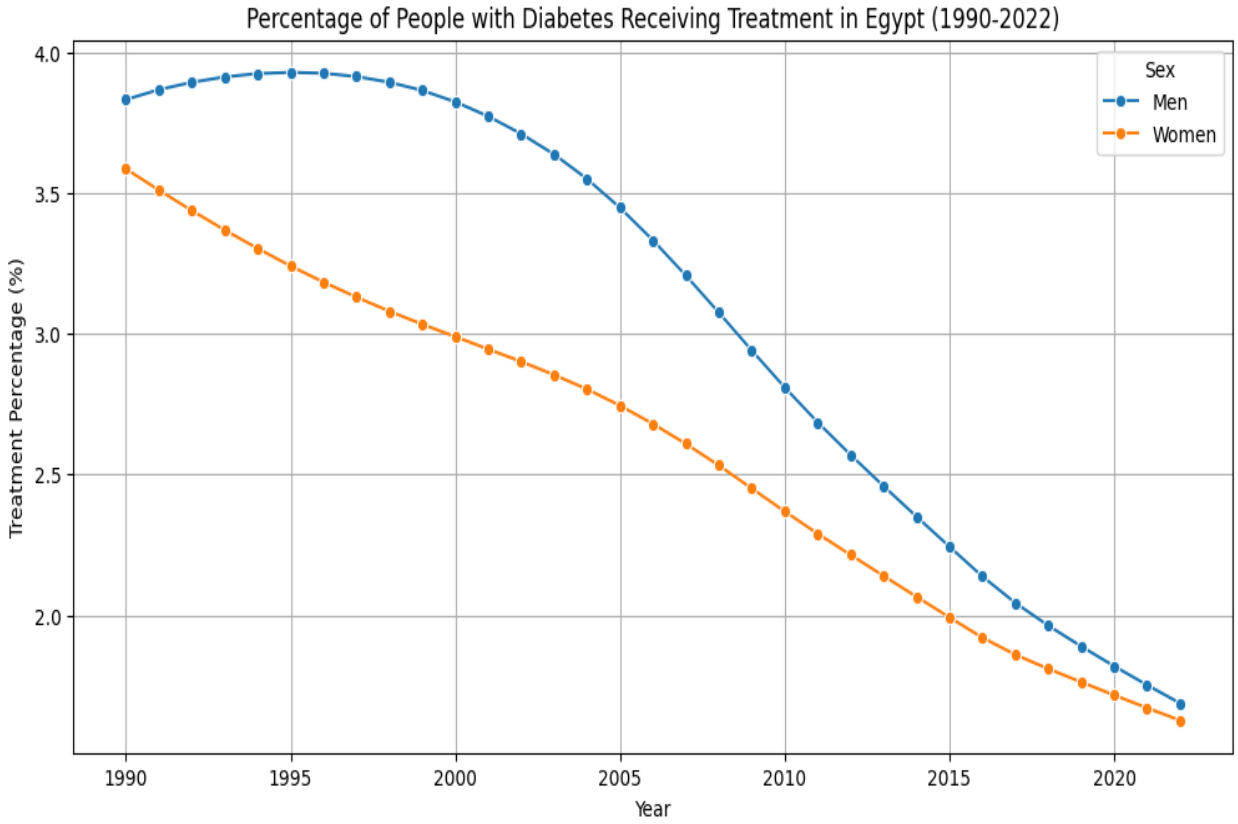
The chart shows the uncertainty in diabetes prevalence estimates for adults (18+) in Egypt from 1990 to 2022. Initially, uncertainty decreased from the early 1990s until the mid-2000s, suggesting improvements in data accuracy or healthcare reporting. However, from around 2010 onward, the uncertainty range began to rise sharply, reaching its highest levels in recent years. This increase indicates growing difficulties in accurately estimating diabetes prevalence, possibly due to inconsistent healthcare data, diagnostic challenges, or variability in population health trends. Addressing these uncertainties is crucial for effective healthcare planning and policymaking.

crude vs age standardized diabetes prevalence in egypt



The chart compares crude and age-standardized diabetes prevalence in Egypt from 1990 to 2022. The age-standardized prevalence for women (red) and men (blue) shows a consistent increase over time, with women having a higher prevalence than men. This trend indicates a rising diabetes burden in Egypt, likely influenced by demographic changes, lifestyle shifts, and healthcare access. The gap between male and female prevalence suggests potential gender-specific risk factors. Addressing these trends requires targeted public health interventions, improved diabetes management, and awareness programs to mitigate the increasing burden of diabetes.

What percentage of people with diabetes in Egypt receive treatment (AgeStd_Treated_30+), and how has this percentage changed from 1990 to 2022?



The chart shows the percentage of people with diabetes receiving treatment in Egypt from 1990 to 2022, separated by gender. Initially, men had a slightly higher treatment percentage than women, with both groups experiencing a decline over time. This downward trend suggests potential challenges in diabetes treatment accessibility, affordability, or adherence. The gender gap indicates that women consistently received less treatment than men, possibly due to disparities in healthcare access, socioeconomic factors, or awareness. Addressing this issue requires targeted policies to improve diabetes care, enhance affordability, and ensure equitable access to treatment for both men and women.

summary

Diabetes Prevalence in Egypt (1990–2022)

- Diabetes prevalence has steadily increased, with women consistently having higher rates than men.

- In 1990, prevalence was 1036.53 per 100,000 men and 1088.10 per 100,000 women. By 2022, it had risen to 2631.99 for men and 2879.25 for women.
- The trend suggests a growing health concern, likely driven by lifestyle changes, urbanization, and improved diagnostics.

Treatment Rates

- While treatment rates initially increased, they started declining after 2010.
- In 1990, treatment rates were 39.72% (men) and 39.01% (women). By 2022, they had declined to 44.41% (men) and 46.82% (women).
- The proportion of untreated diabetes cases increased, with 98.25% of men and 98.33% of women untreated in 2021.

Crude vs. Age-Standardized Prevalence

- Crude diabetes prevalence rates are consistently lower than age-standardized rates.
- The difference between crude and age-standardized rates has widened over time, indicating that aging is a significant contributor to diabetes prevalence.

Correlation Between Prevalence & Treatment

- The overall correlation coefficient is 0.44, indicating a moderate positive relationship.
- Gender-based analysis shows a stronger correlation for women (0.79) than men (0.21), suggesting that women are more likely to receive treatment as prevalence rises.

Uncertainty in Prevalence Estimates

- The uncertainty in diabetes prevalence estimates has increased over time.

- Women consistently have higher uncertainty in estimates than men, likely due to diagnostic challenges and variations in healthcare data.

Key Trends

- Highest Diabetes Prevalence: 2022 (2879.25 per 100,000 people)
- Lowest Diabetes Prevalence: 1990 (1036.53 per 100,000 people)
- Declining Treatment Coverage: From 3.8–3.5% in 1990 to 1.69–1.63% in 2022, highlighting significant gaps in healthcare accessibility.

Recommendations

Improve Public Awareness & Prevention

- Launch national campaigns to promote **healthy lifestyles, physical activity, and early screening**.
- Encourage **dietary changes and obesity management programs**.

Expand Access to Diabetes Treatment

- Strengthen **healthcare infrastructure** to improve treatment availability.
- Implement **subsidized treatment plans** to make diabetes care affordable.
- Improve outreach programs targeting **rural and underprivileged areas**.

Address Gender-Based Disparities

- Develop **gender-specific healthcare policies** to ensure equitable treatment access.
- Increase **awareness campaigns for women**, emphasizing early diagnosis and management.

Enhance Data Accuracy & Monitoring

- Improve **data collection methodologies** to reduce uncertainty in prevalence estimates.
- Invest in **digital health records** and **AI-driven analytics** for better diabetes tracking.

Strengthen Policy Interventions

- Introduce **mandatory diabetes screening programs** for high-risk individuals.
- Promote **workplace wellness initiatives** to encourage healthier habits.