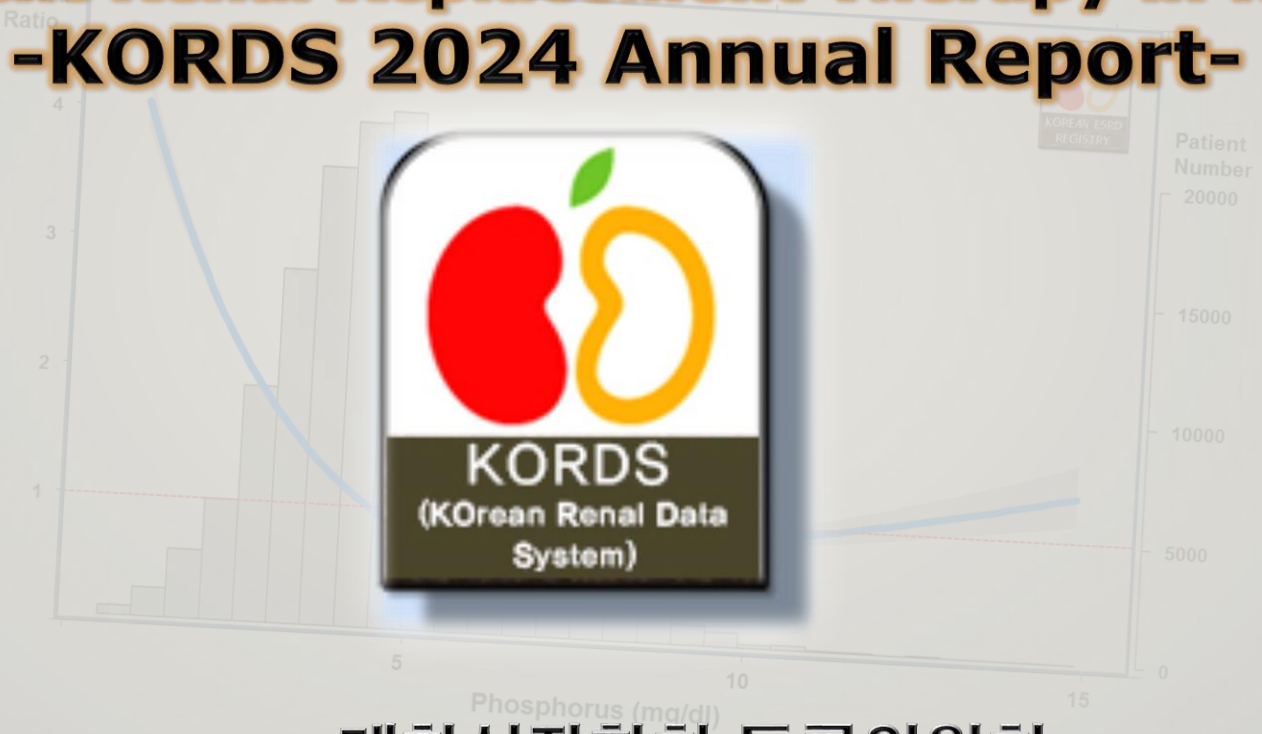
우리나라 투석 환자 발병률 및 유병률 변화
-KORDS 2024 Annual Report-

Current Renal Replacement Therapy in Korea
-KORDS 2024 Annual Report-



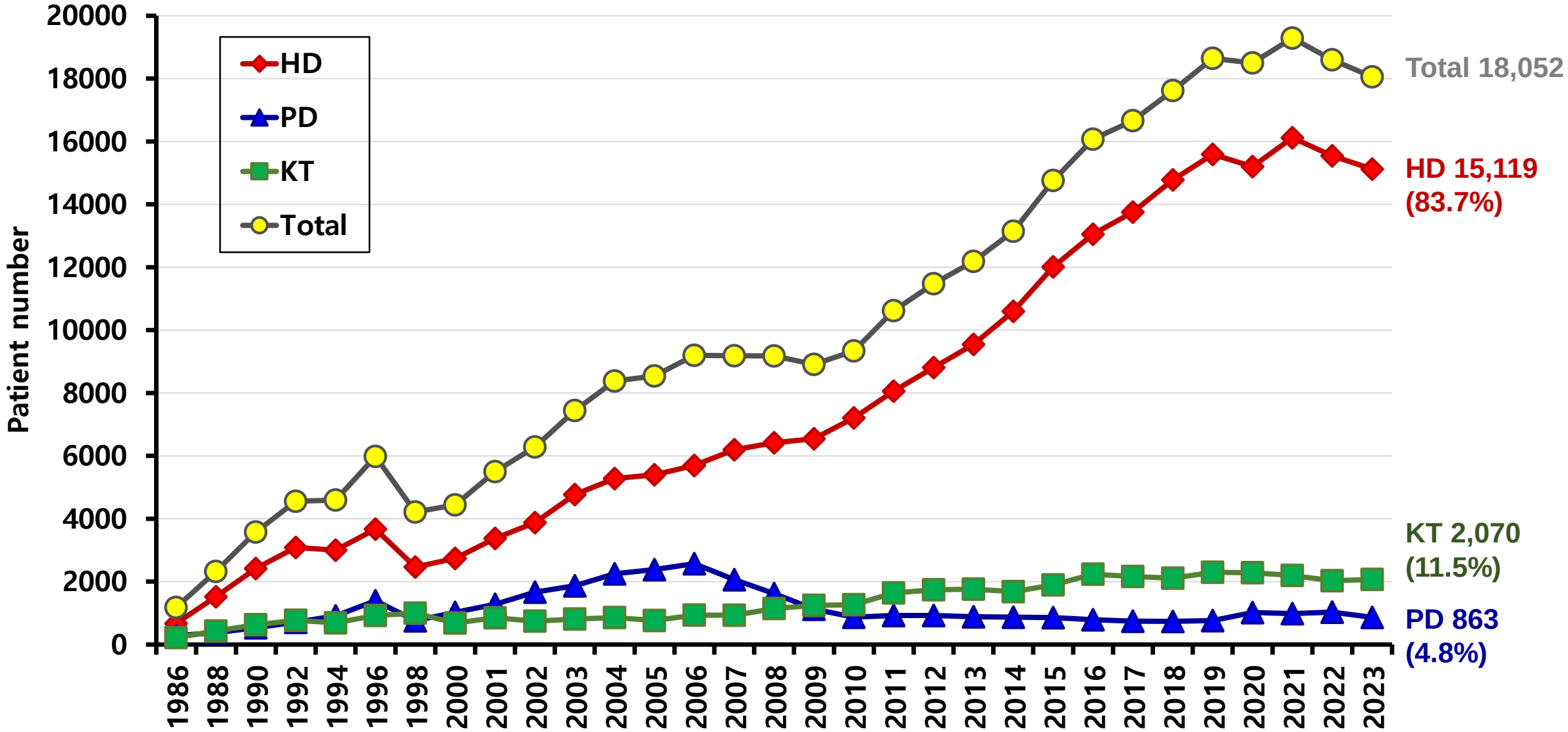
KORDS
(KOrean Renal Data System)

대한신장학회 등록위원회
KORDS committee (Korean Renal Data System)

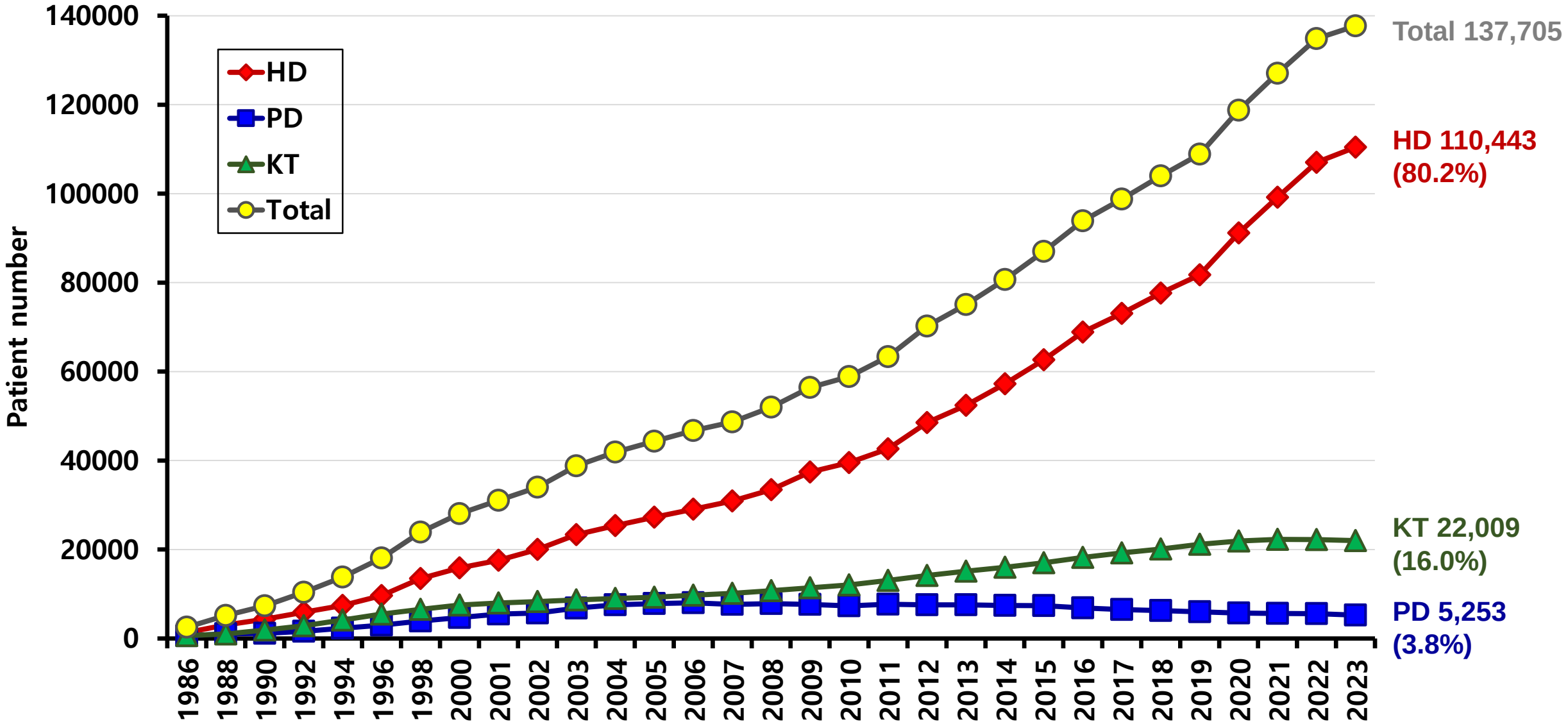
목차 (Contents)

I. 우리나라 말기 신부전 환자의 발병률 및 유병률 분석 (Incidence and Prevalence of ESKD patients in Korea, 2023)

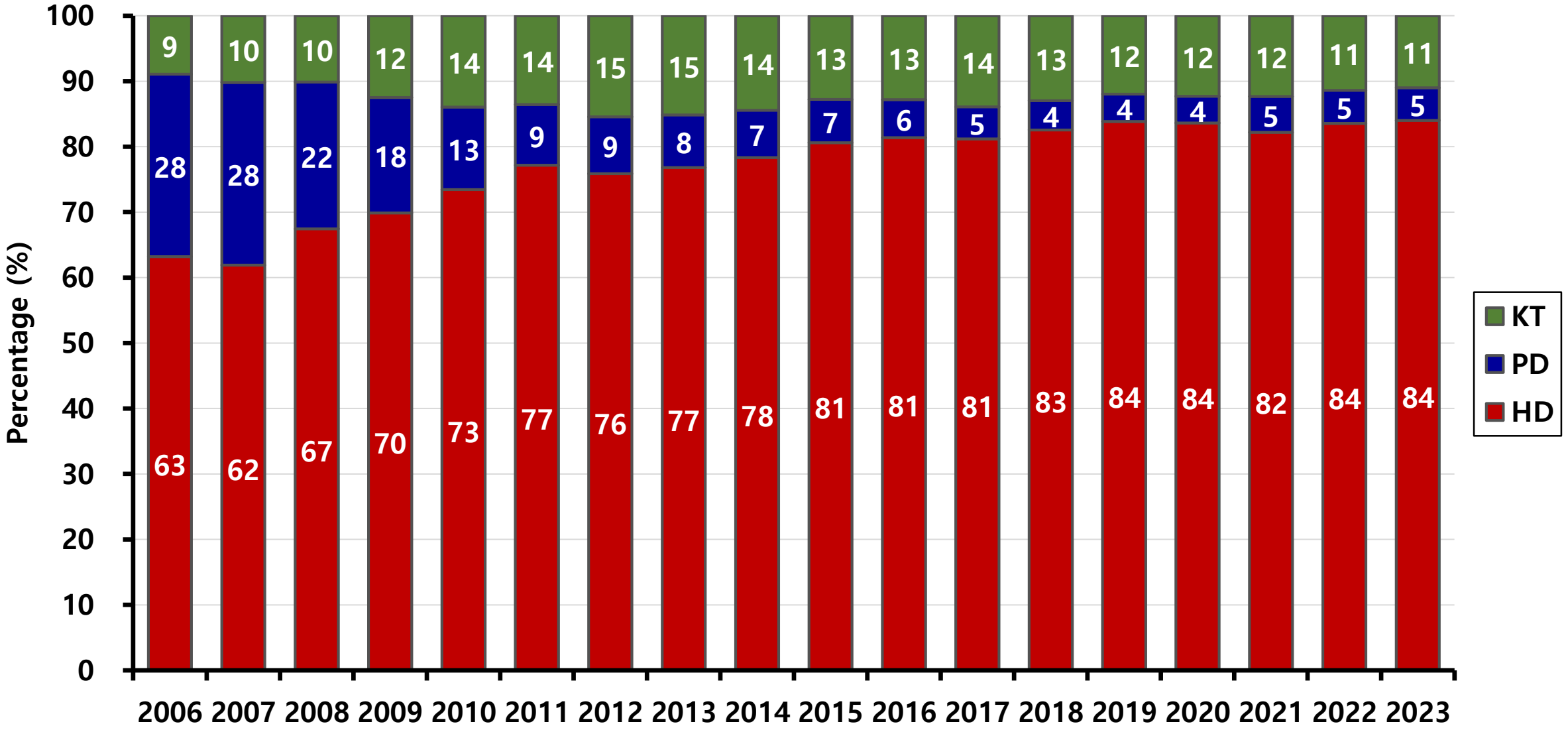
Incidence of ESKD



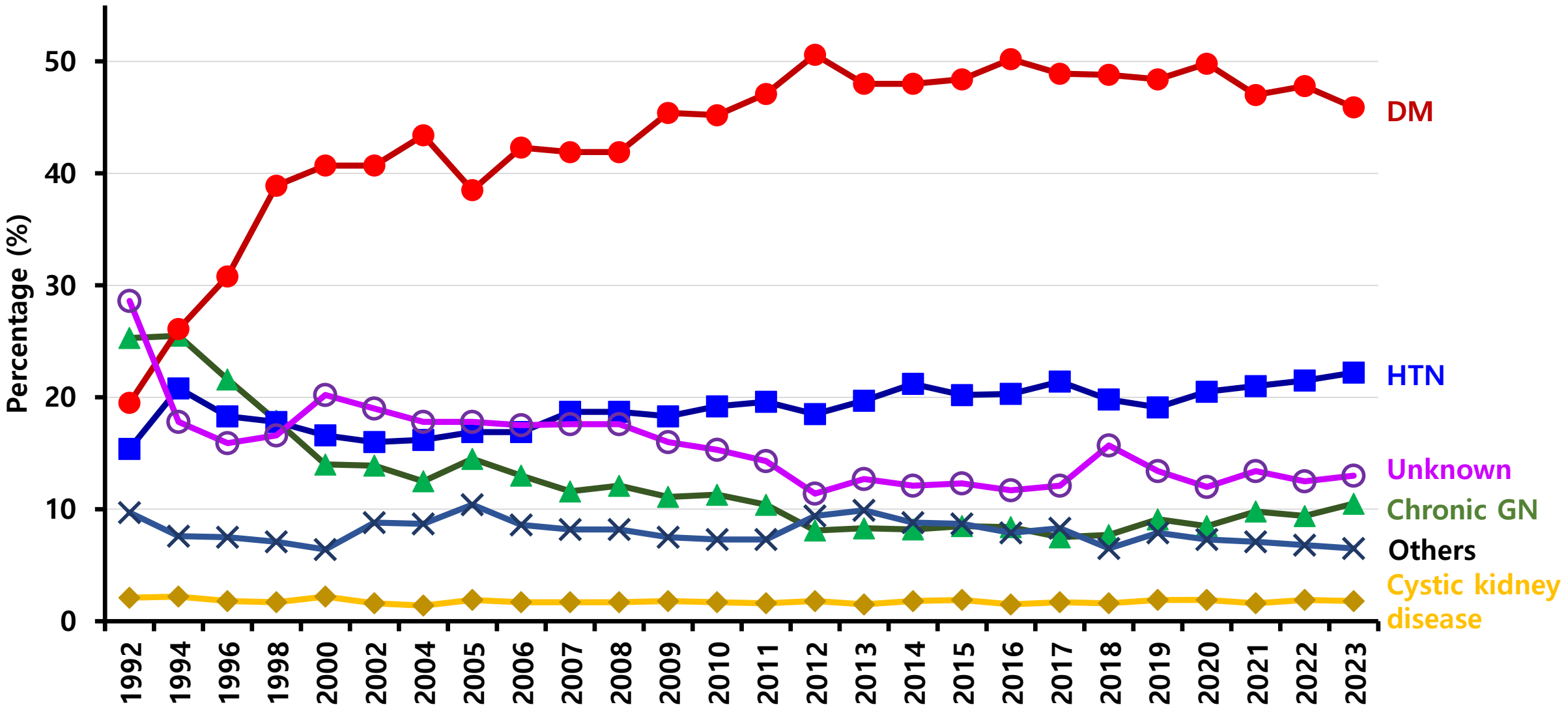
Prevalence of ESKD



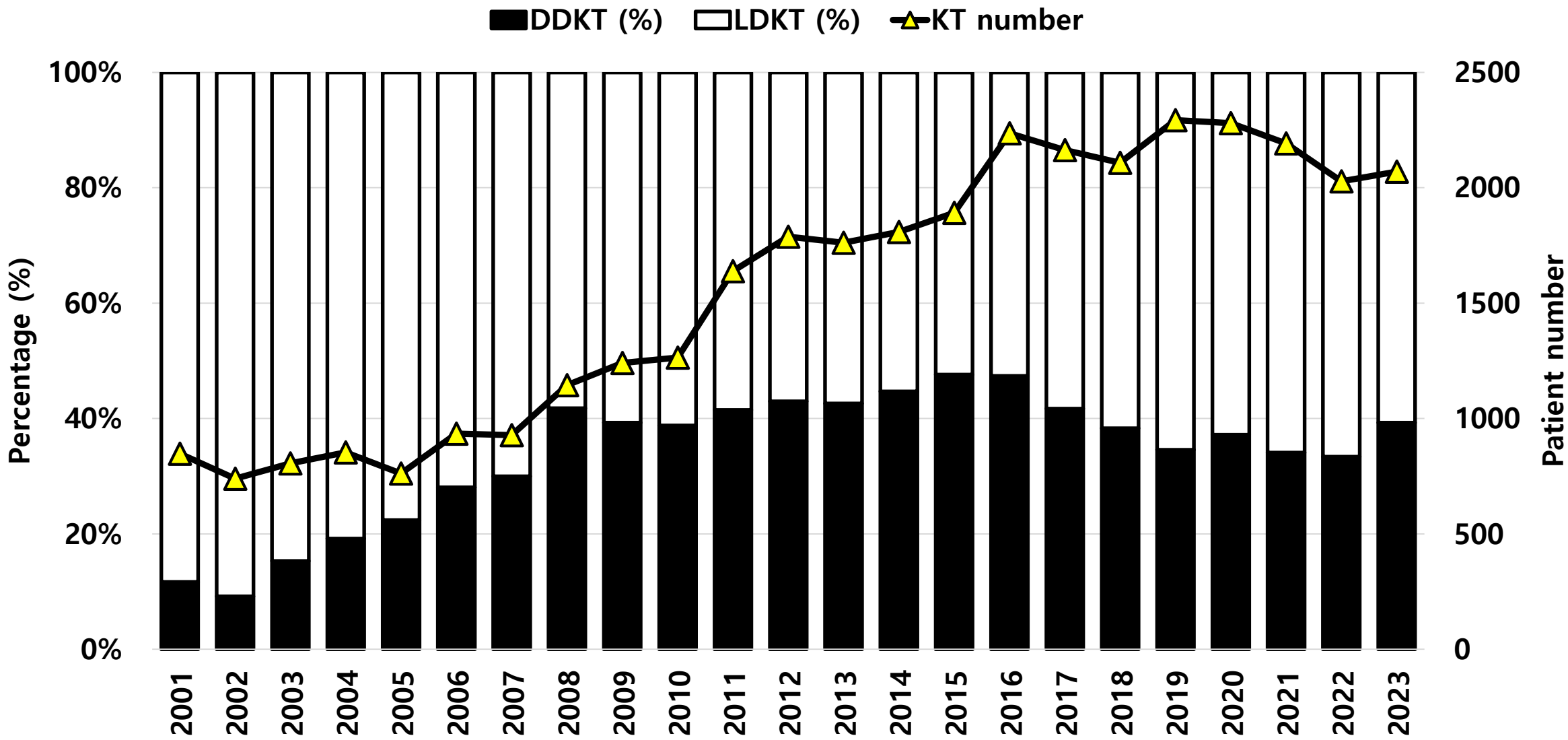
Proportion of Annual ESKD Incidence



Causes of ESKD

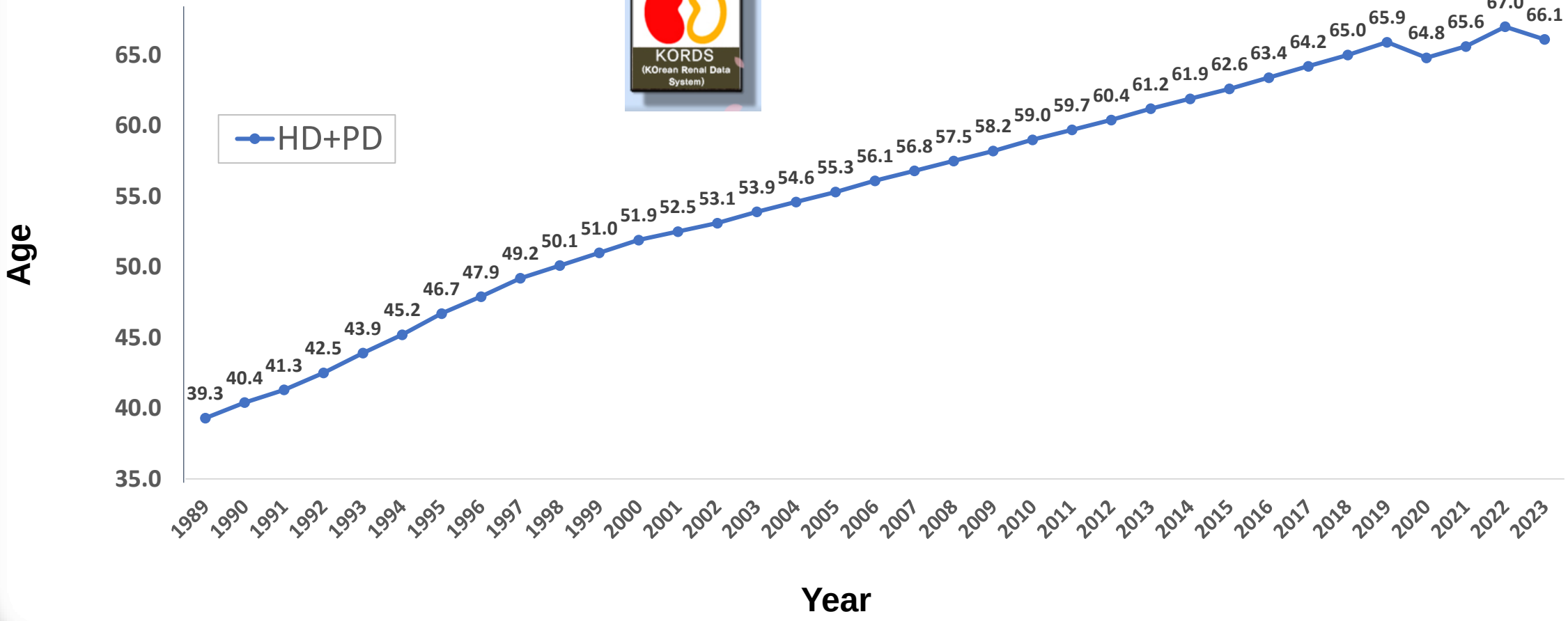


Current Status of Kidney Transplantation (KT)



II. 우리나라 말기신부전 환자와 투석 치료의 특징 (Patients and Dialysis Characteristics of ESKD in Korea, 2023)

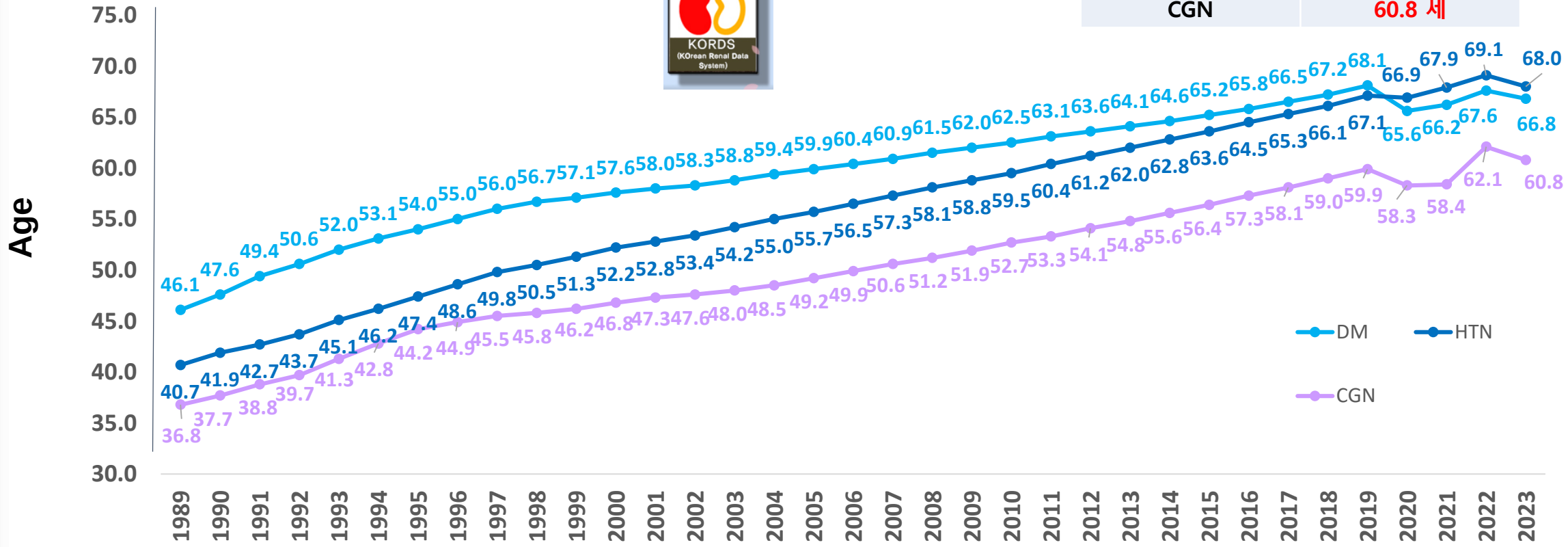
Trend of age in patients with ESKD



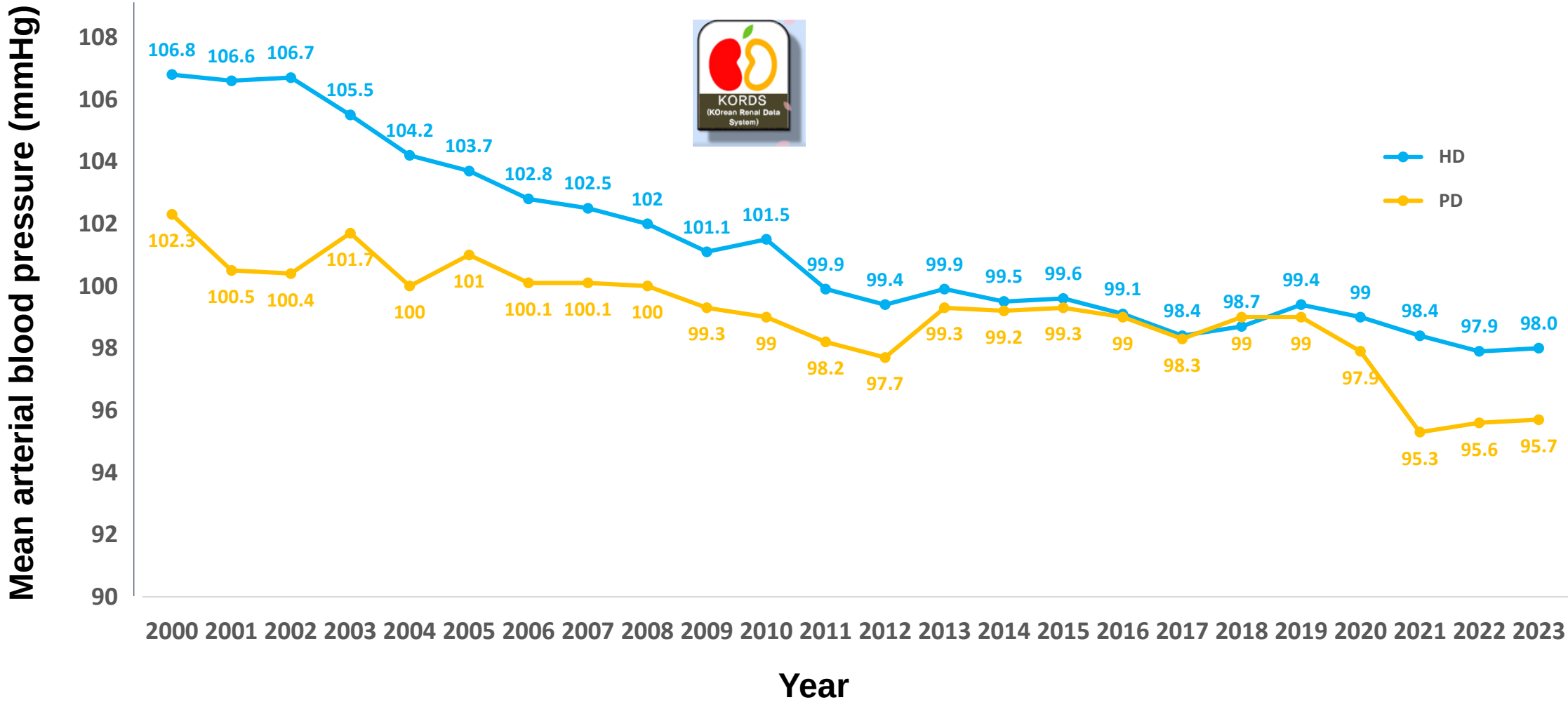
Trend in proportion of elderly patients with ESKD

Age distribution of dialysis patients according to underlying diseases

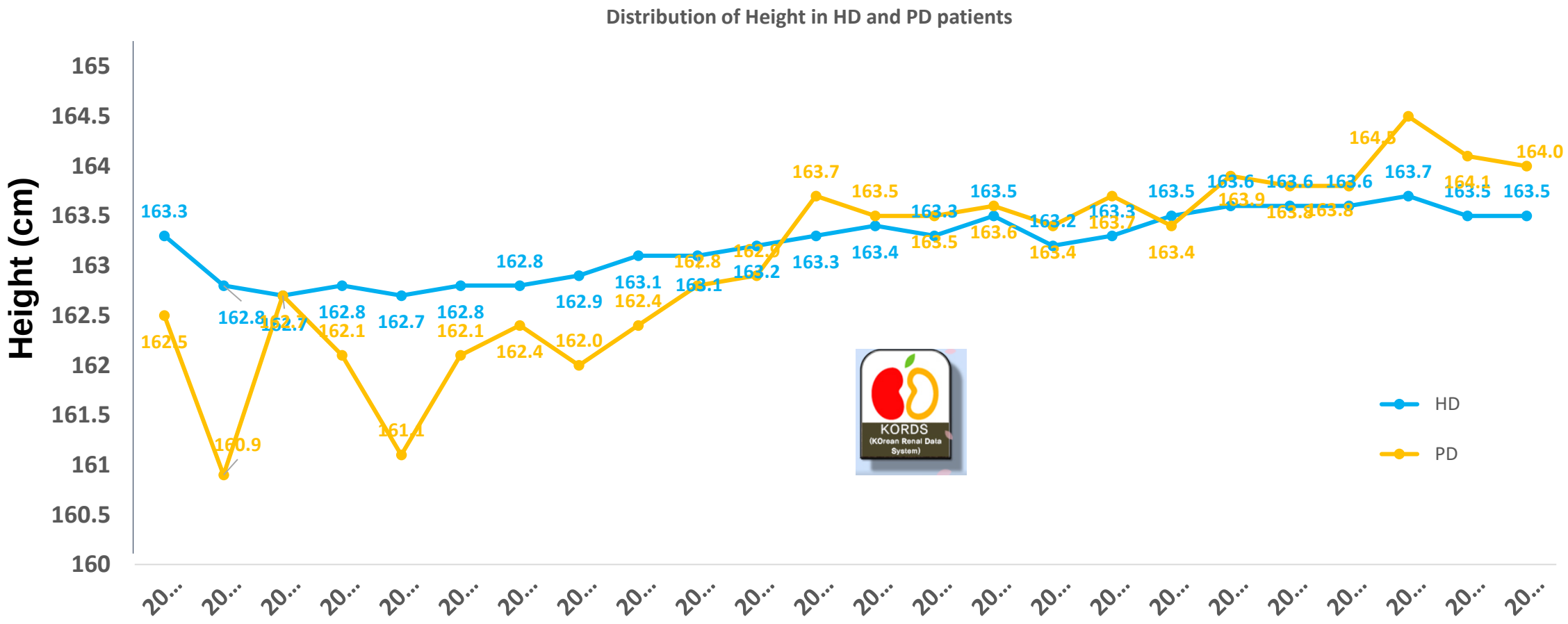
기저 질환	Age (2023년)
DM	66.8 세
HTN	68.0 세
CGN	60.8 세



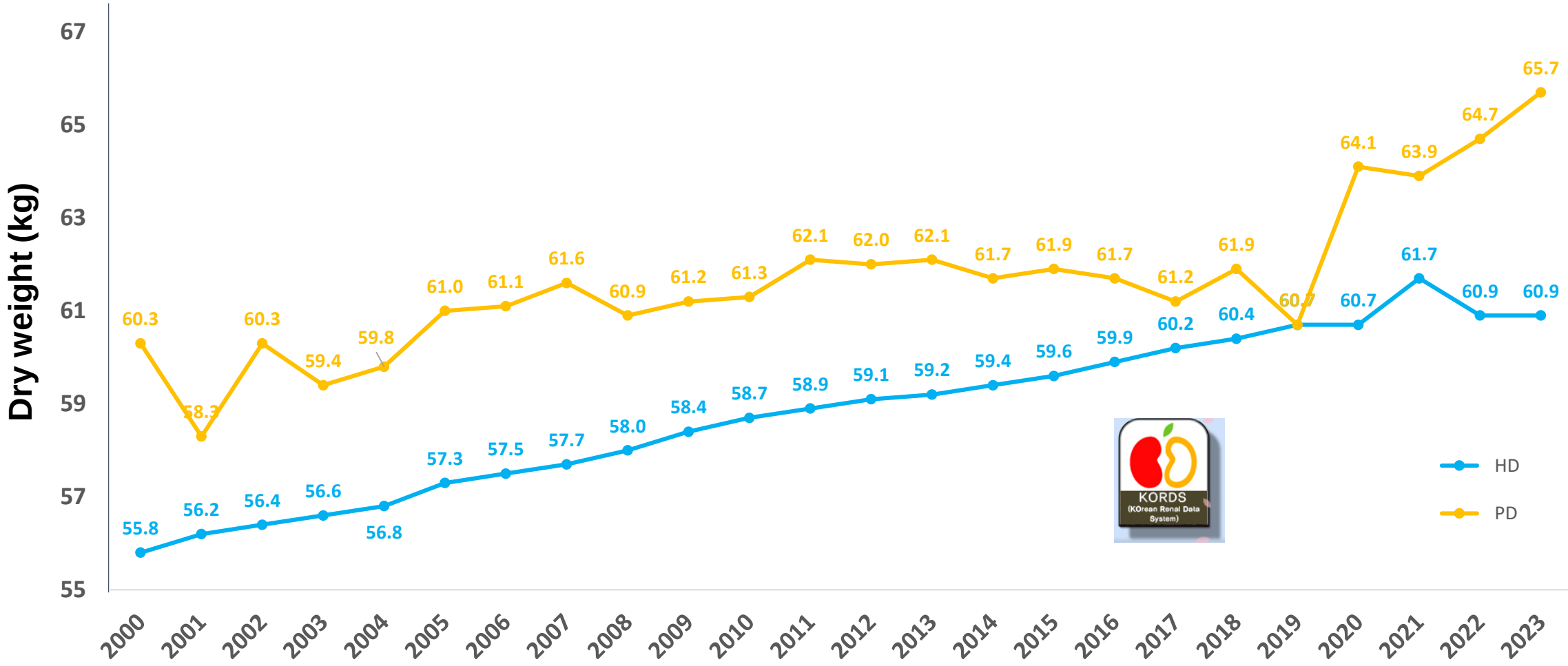
Distribution of mean blood pressure



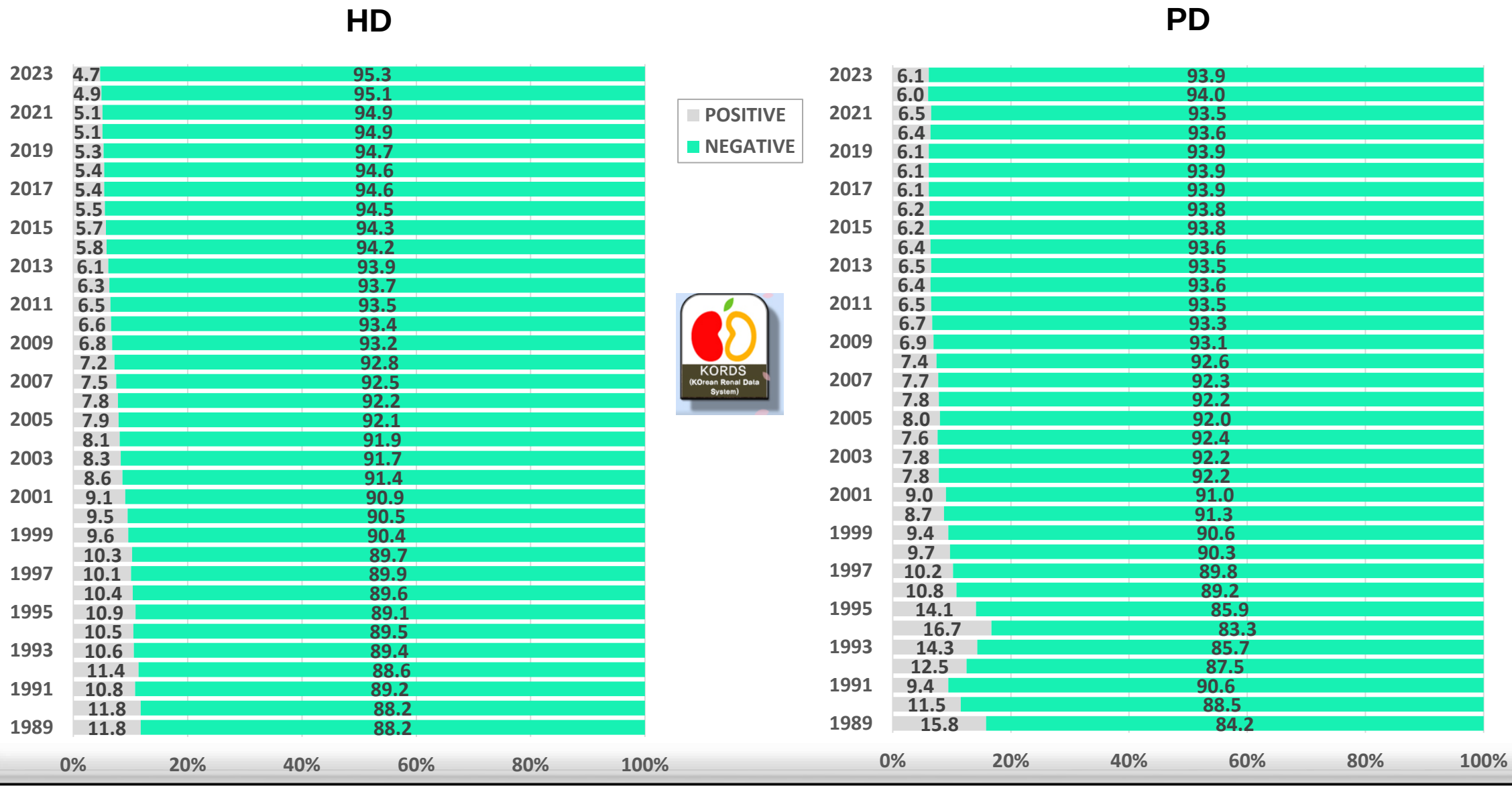
Distribution of Height



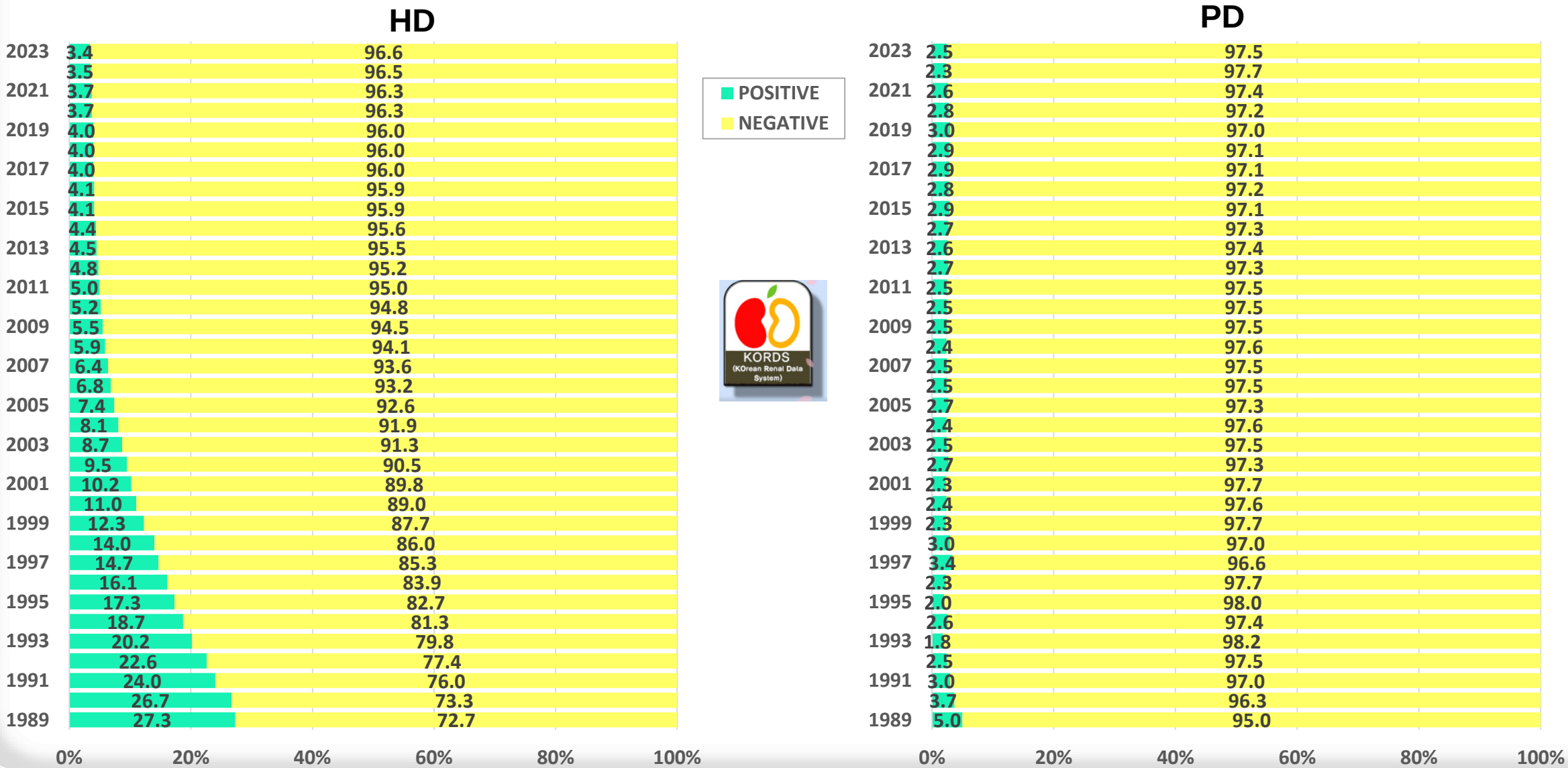
Distribution of Dry weight



Hepatitis B

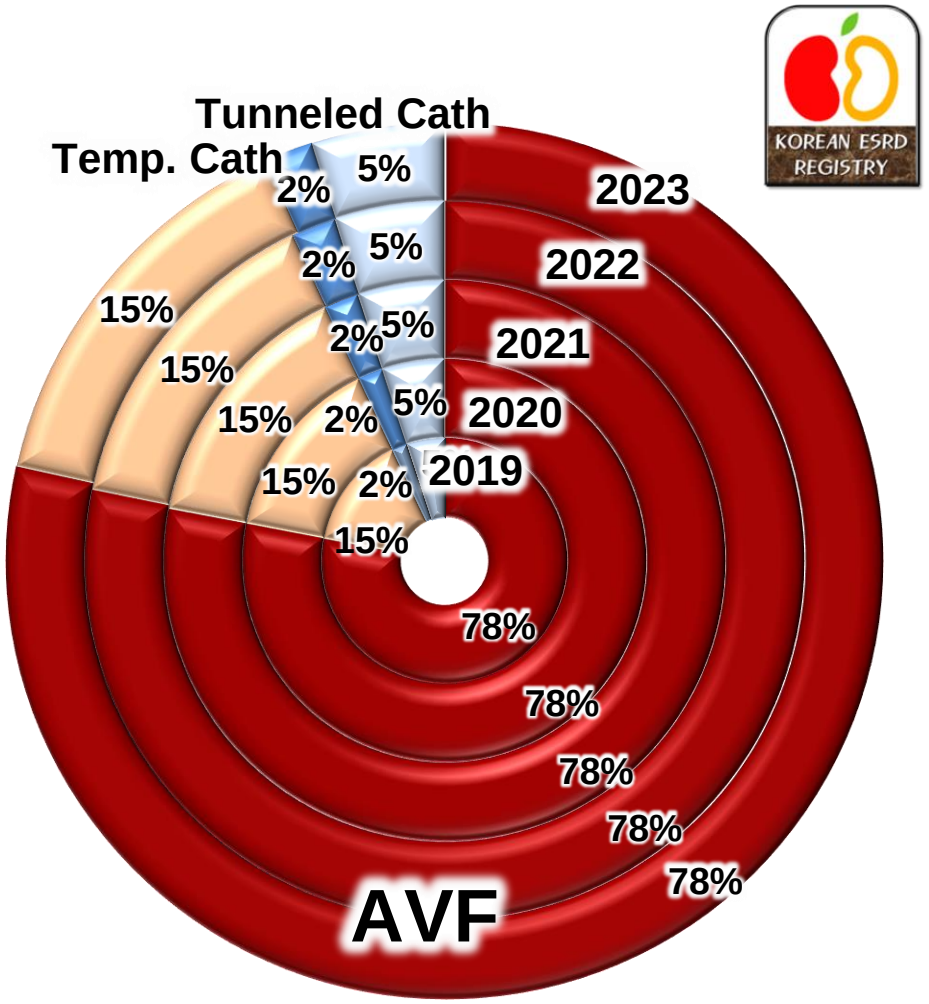

HD
PD
POSITIVE
NEGATIVE
KORDS
(KOrean Renal Data System)
2023 4.7 95.3
4.9 95.1
2021 5.1 94.9
5.1 94.9
2019 5.3 94.7
5.4 94.6
2017 5.4 94.6
5.5 94.5
2015 5.7 94.3
5.8 94.2
2013 6.1 93.9
6.3 93.7
2011 6.5 93.5
6.6 93.4
2009 6.8 93.2
7.2 92.8
2007 7.5 92.5
7.8 92.2
2005 7.9 92.1
8.1 91.9
2003 8.3 91.7
8.6 91.4
2001 9.1 90.9
9.5 90.5
1999 9.6 90.4
10.3 89.7
1997 10.1 89.9
10.4 89.6
1995 10.9 89.1
10.5 89.5
1993 10.6 89.4
11.4 88.6
1991 10.8 89.2
11.8 88.2
1989 11.8 88.2
2023 6.1 93.9
6.0 94.0
2021 6.5 93.5
6.4 93.6
2019 6.1 93.9
6.1 93.9
2017 6.1 93.9
6.2 93.8
2015 6.2 93.8
6.4 93.6
2013 6.5 93.5
6.4 93.6
2011 6.5 93.5
6.7 93.3
2009 6.9 93.1
7.4 92.6
2007 7.7 92.3
7.8 92.2
2005 8.0 92.0
7.6 92.4
2003 7.8 92.2
7.8 92.2
2001 9.0 91.0
8.7 91.3
1999 9.4 90.6
9.7 90.3
1997 10.2 89.8
10.8 89.2
1995 14.1 85.9
16.7 83.3
1993 14.3 85.7
12.5 87.5
1991 9.4 90.6
11.5 88.5
1989 15.8 84.2
0% 20% 40% 60% 80% 100%
0% 20% 40% 60% 80% 100%

Hepatitis C

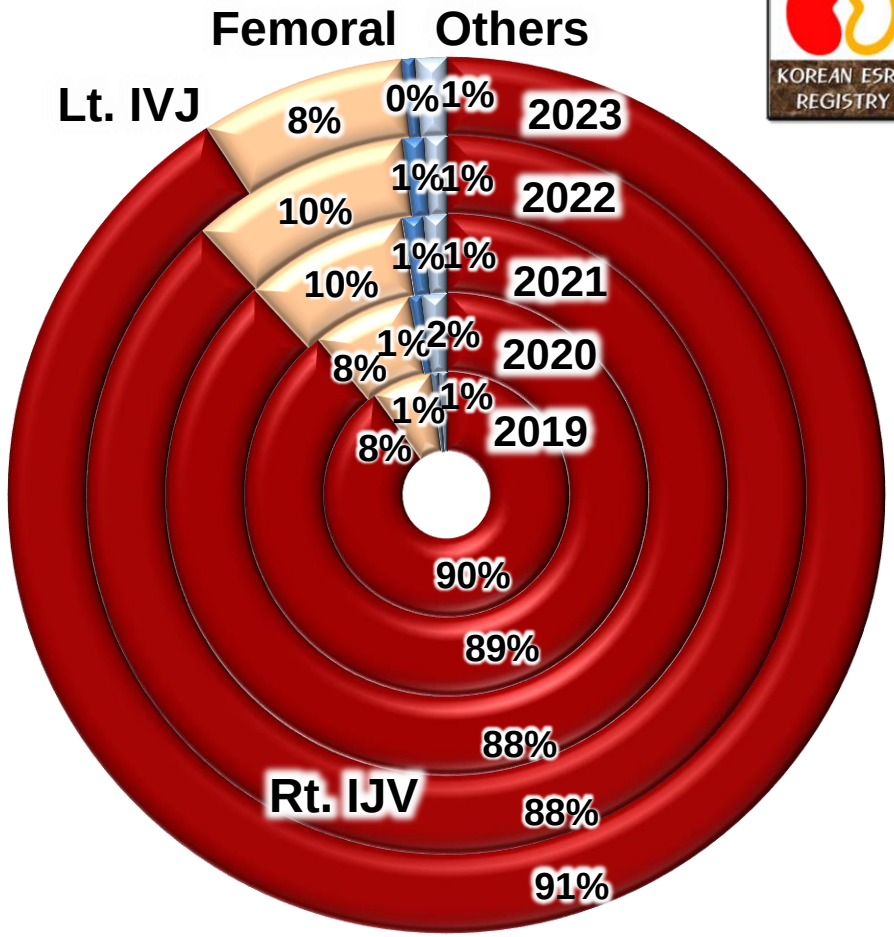

HD
PD
POSITIVE
NEGATIVE
KORDS
(KOrean Renal Data System)
2023 3.4 96.6
3.5 96.5
2021 3.7 96.3
3.7 96.3
2019 4.0 96.0
4.0 96.0
2017 4.0 96.0
4.1 95.9
2015 4.1 95.9
4.4 95.6
2013 4.5 95.5
4.8 95.2
2011 5.0 95.0
5.2 94.8
2009 5.5 94.5
5.9 94.1
2007 6.4 93.6
6.8 93.2
2005 7.4 92.6
8.1 91.9
2003 8.7 91.3
9.5 90.5
2001 10.2 89.8
11.0 89.0
1999 12.3 87.7
14.0 86.0
1997 14.7 85.3
16.1 83.9
1995 17.3 82.7
18.7 81.3
1993 20.2 79.8
22.6 77.4
1991 24.0 76.0
26.7 73.3
1989 27.3 72.7
2023 2.5 97.5
2.3 97.7
2021 2.6 97.4
2.8 97.2
2019 3.0 97.0
2.9 97.1
2017 2.9 97.1
2.8 97.2
2015 2.9 97.1
2.7 97.3
2013 2.6 97.4
2.7 97.3
2011 2.5 97.5
2.5 97.5
2009 2.5 97.5
2.4 97.6
2007 2.5 97.5
2.5 97.5
2005 2.7 97.3
2.4 97.6
2003 2.5 97.5
2.7 97.3
2001 2.3 97.7
2.4 97.6
1999 2.3 97.7
3.0 97.0
1997 3.4 96.6
2.3 97.7
1995 2.0 98.0
2.6 97.4
1993 1.8 98.2
2.5 97.5
1991 3.0 97.0
3.7 96.3
1989 5.0 95.0
0% 20% 40% 60% 80% 100%
0% 20% 40% 60% 80% 100%

우리나라 혈액 투석 환자의 특징

Vascular Access (1)-Distribution of access type

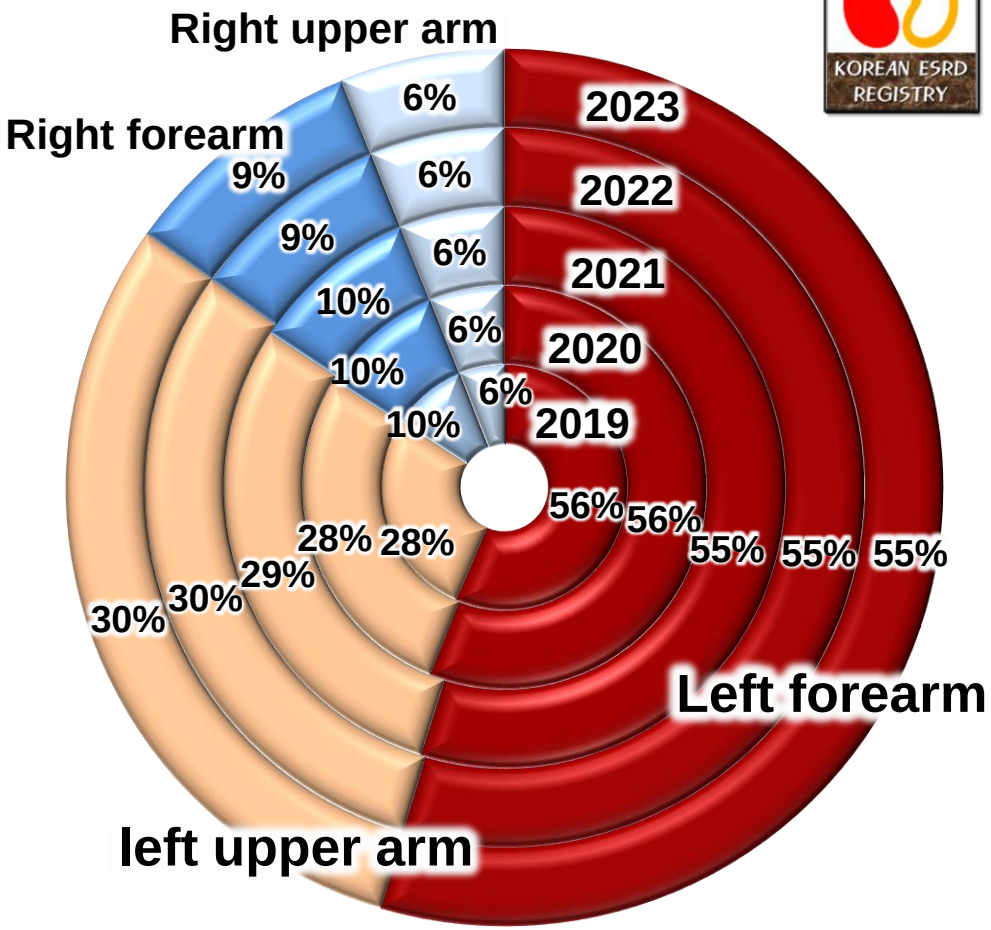


Vascular Access (2)-Location of catheter for HD

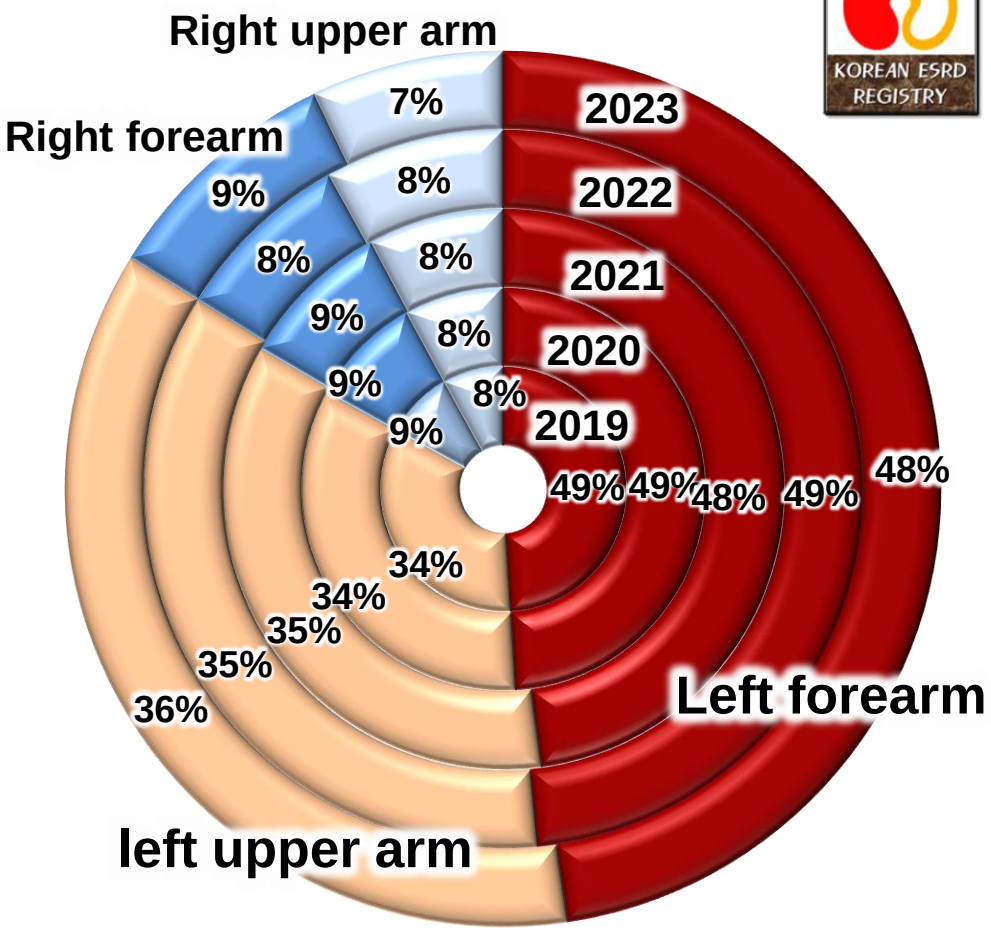


Vascular Access (3)-Distribution of OP site

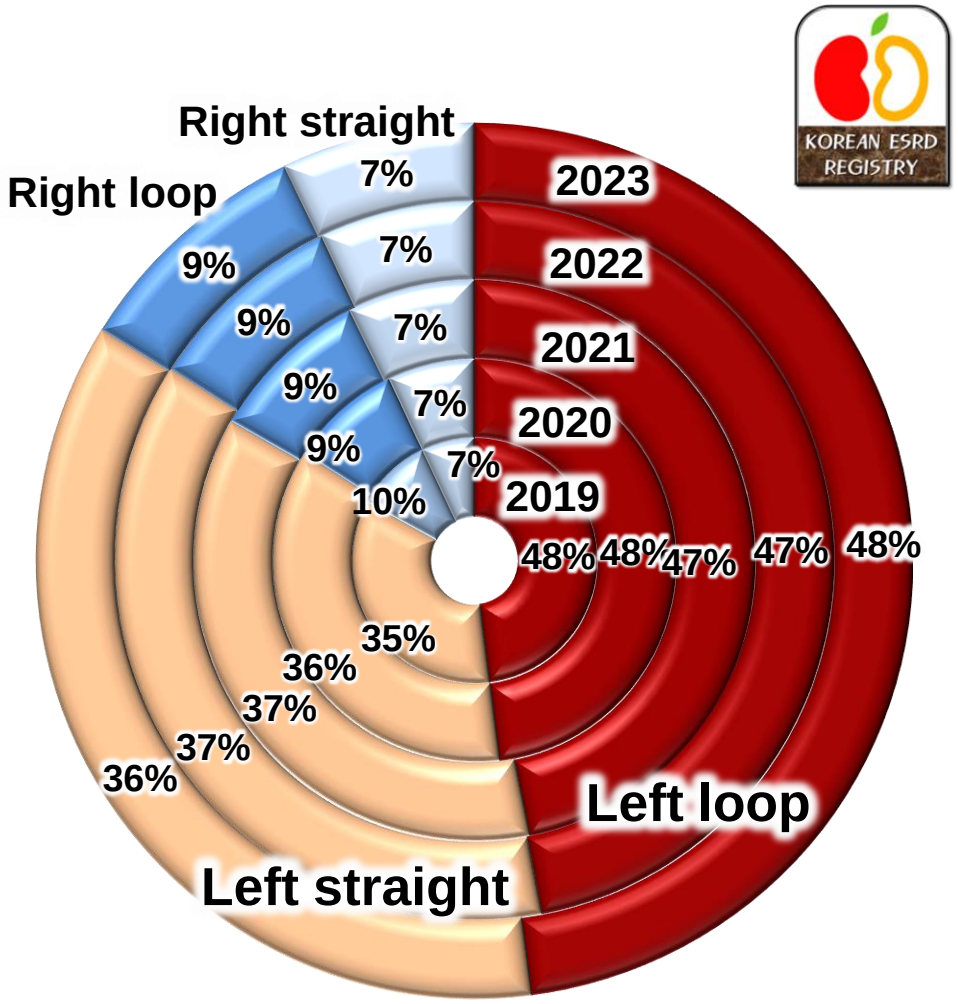
AVF



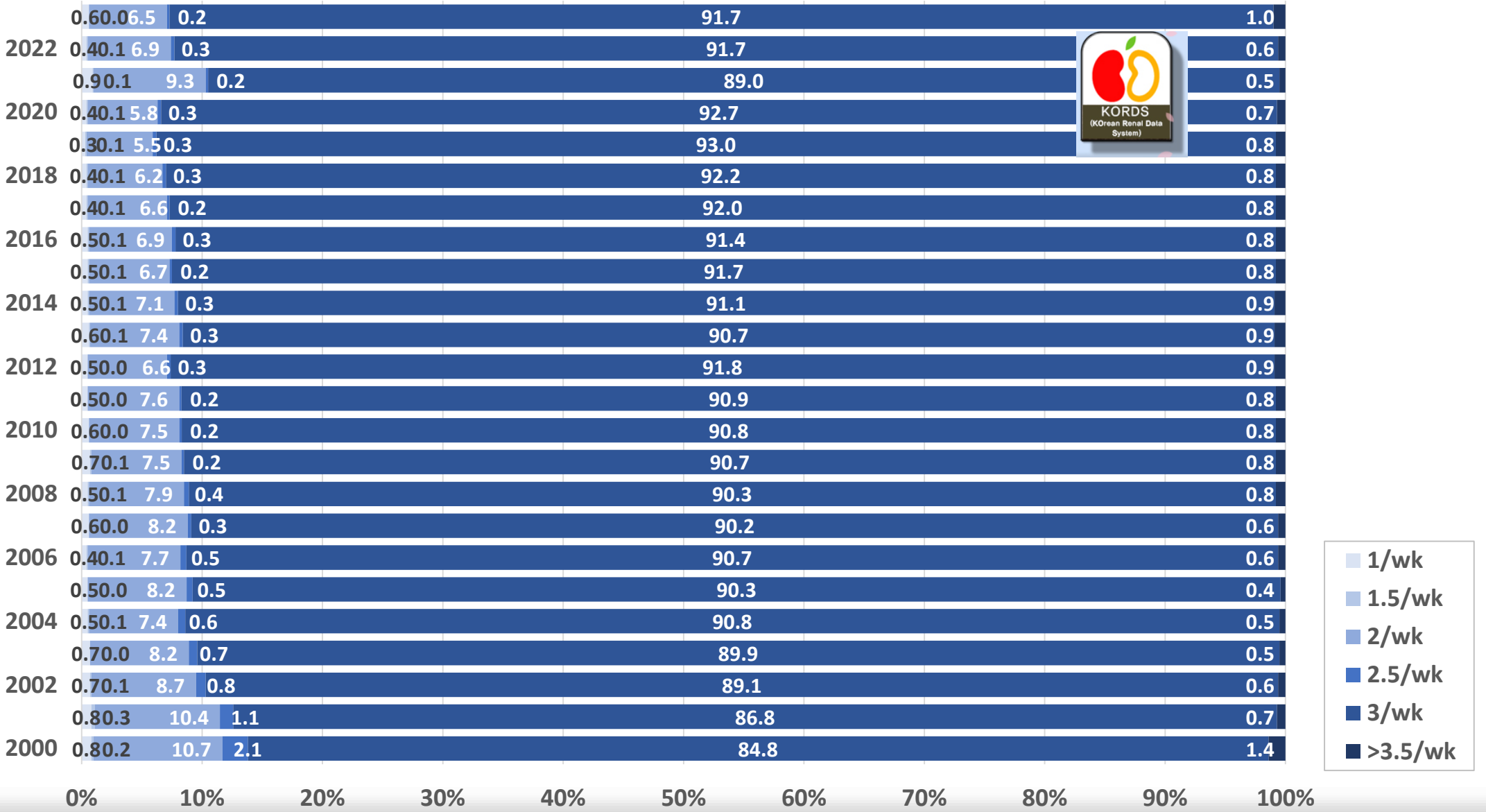
AVG



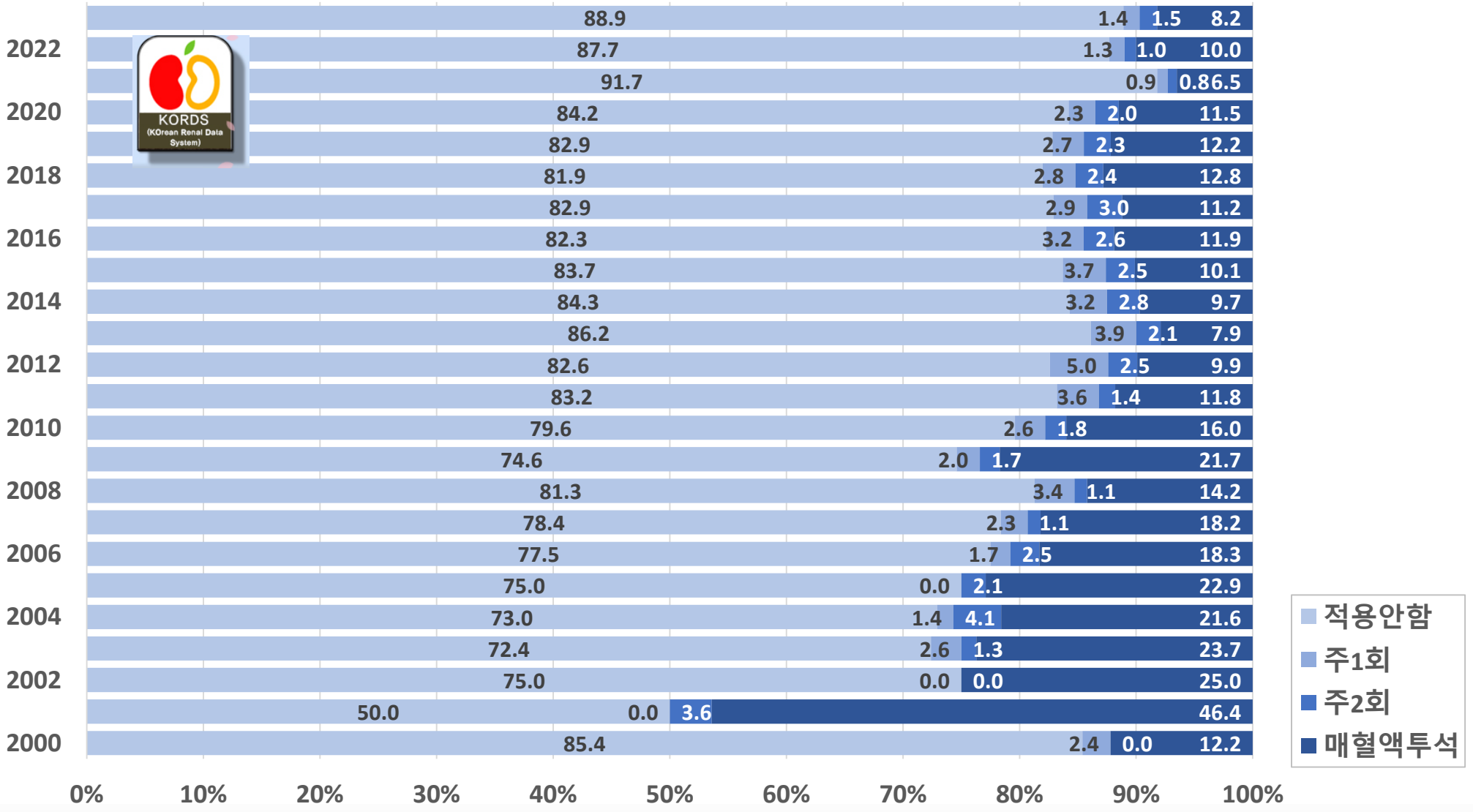
Vascular Access (4)-Type of AVG



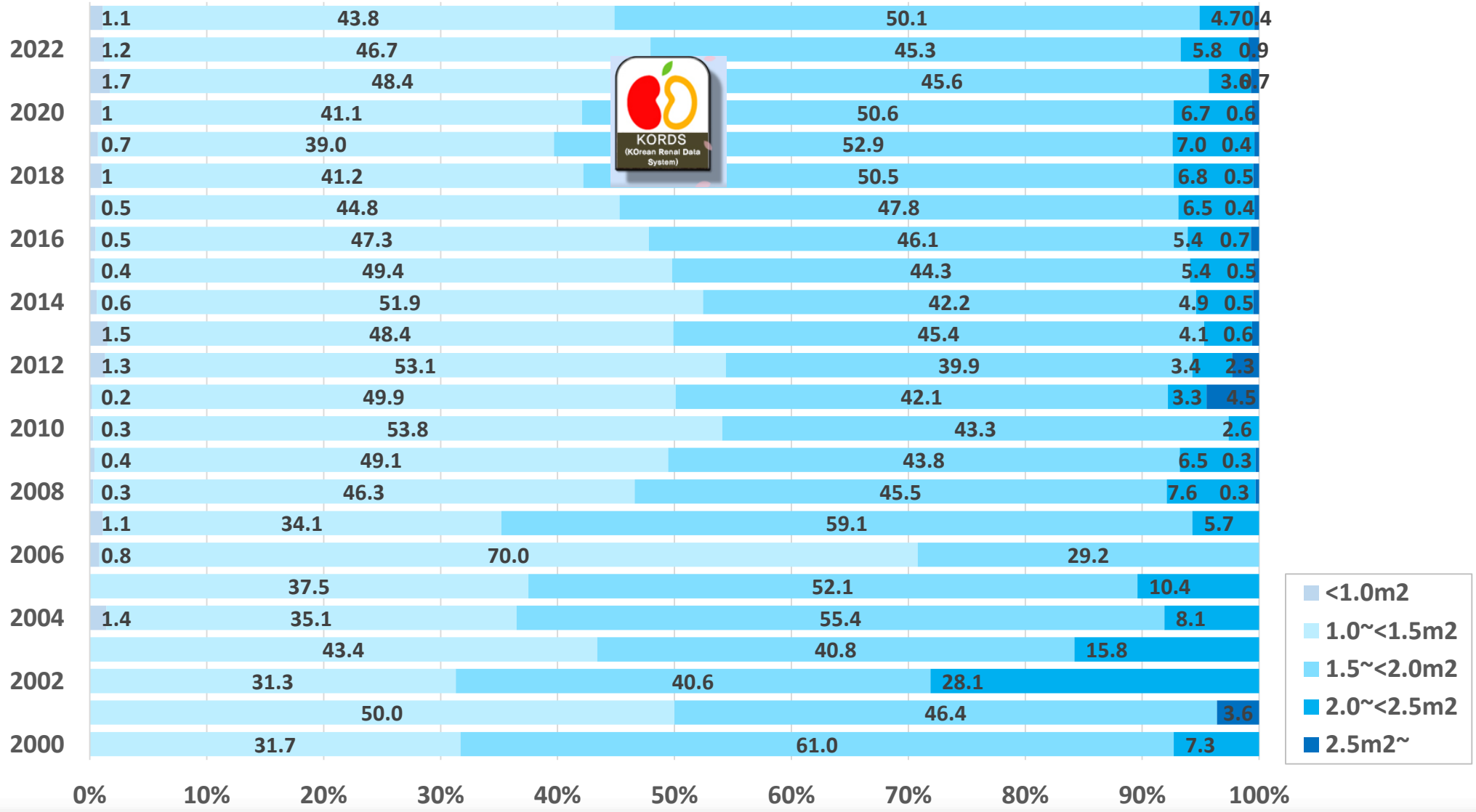
Frequency of HD (session/week)



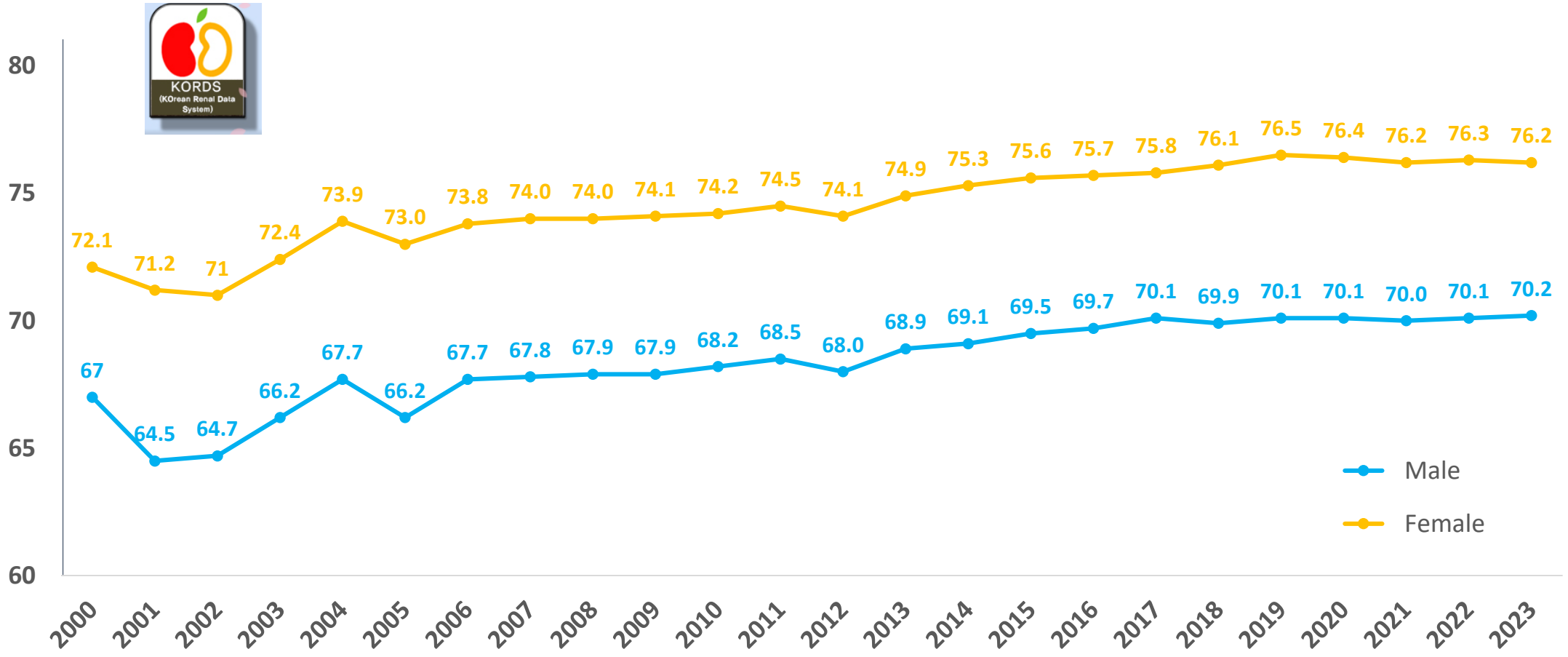
Proportion of HDF



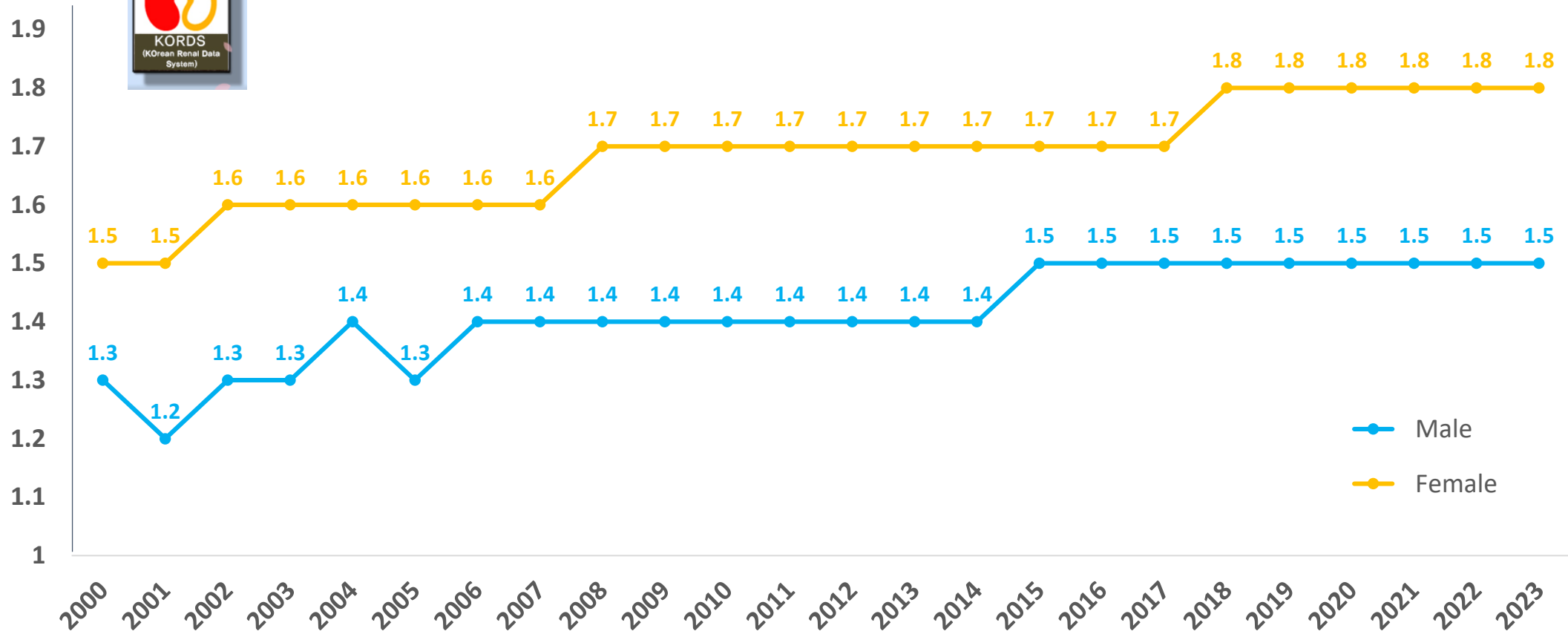
Percent of patients according to the using dialyzer membrane surface area



Adequacy of HD (Urea Reduction Rate)

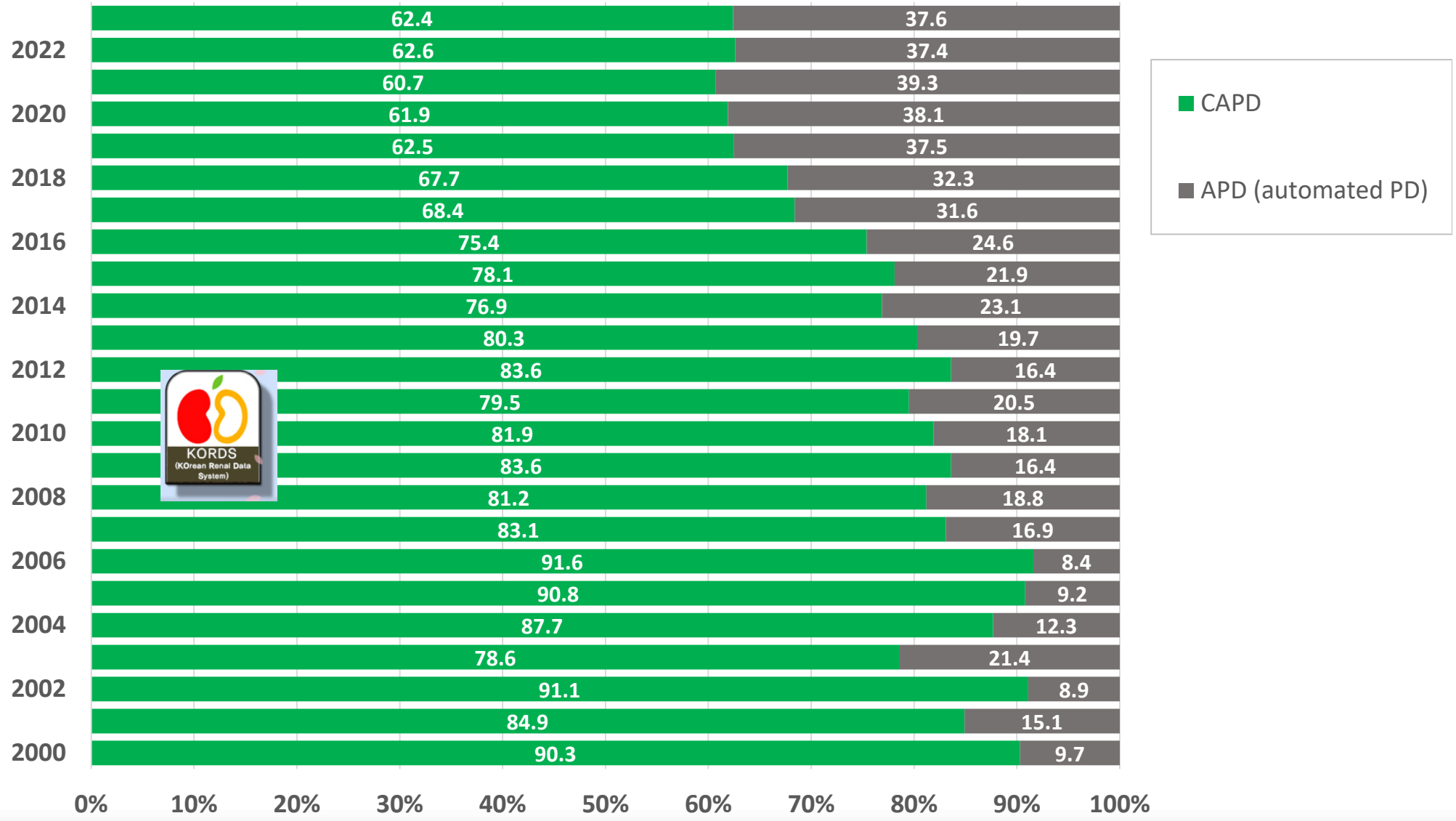


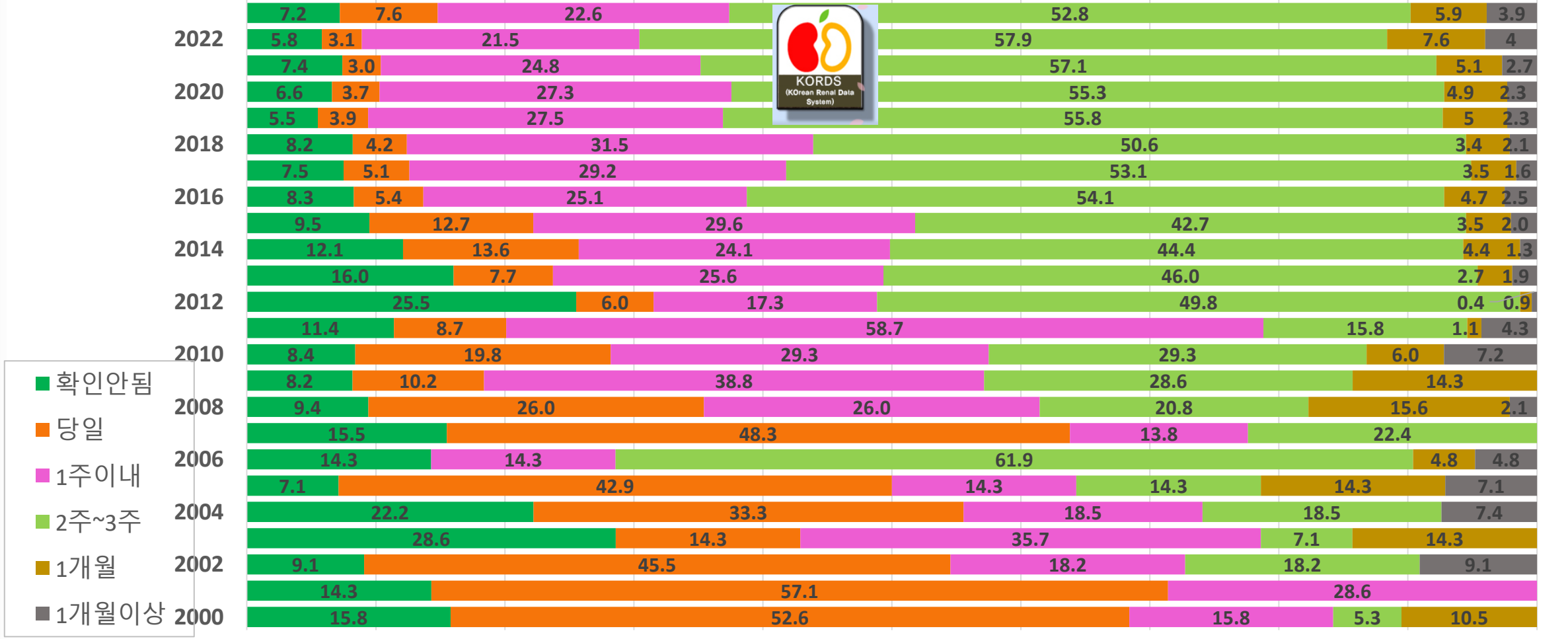
Adequacy of HD (spKt/V)

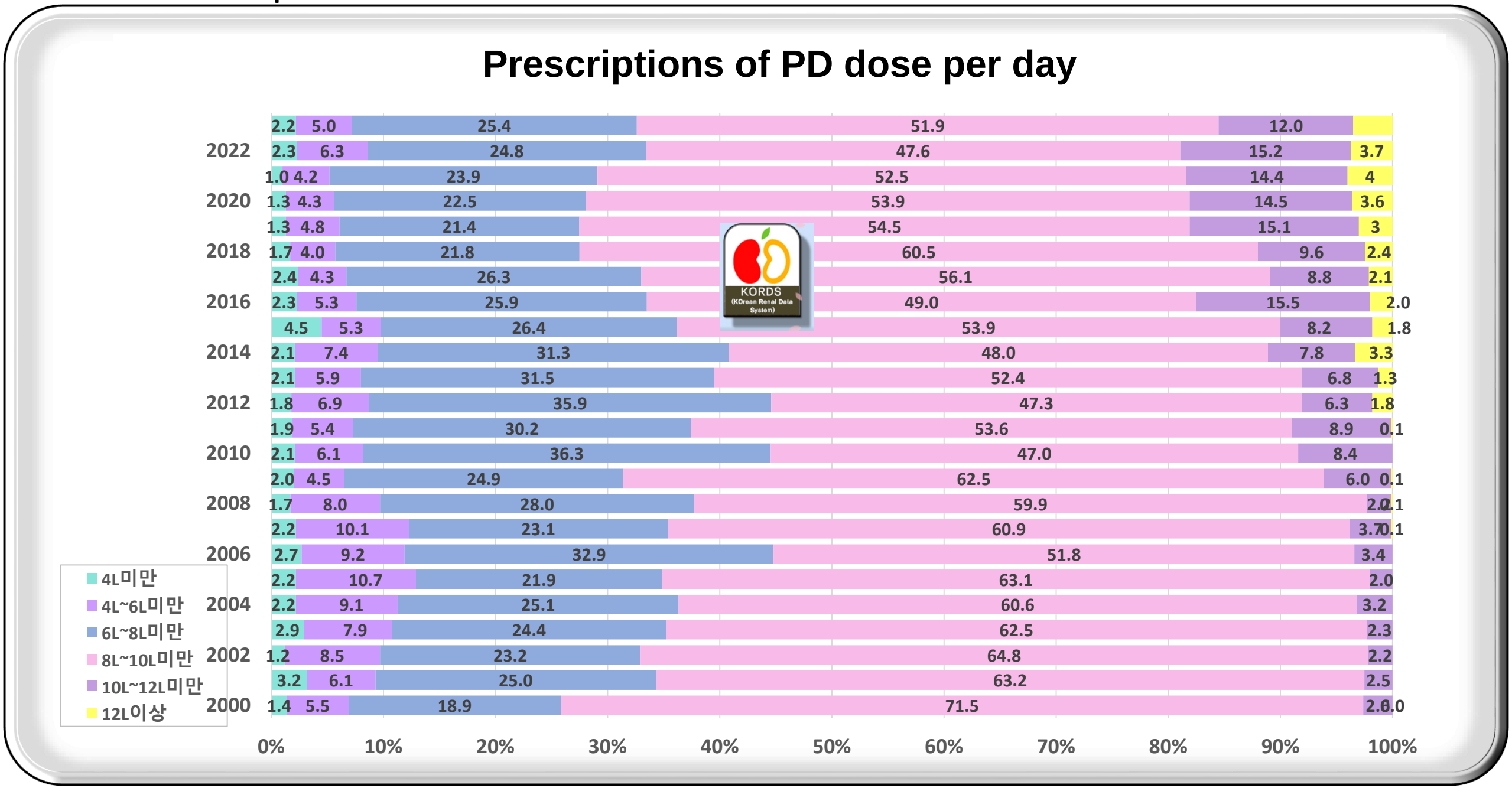


우리나라 복막 투석 환자의 특징

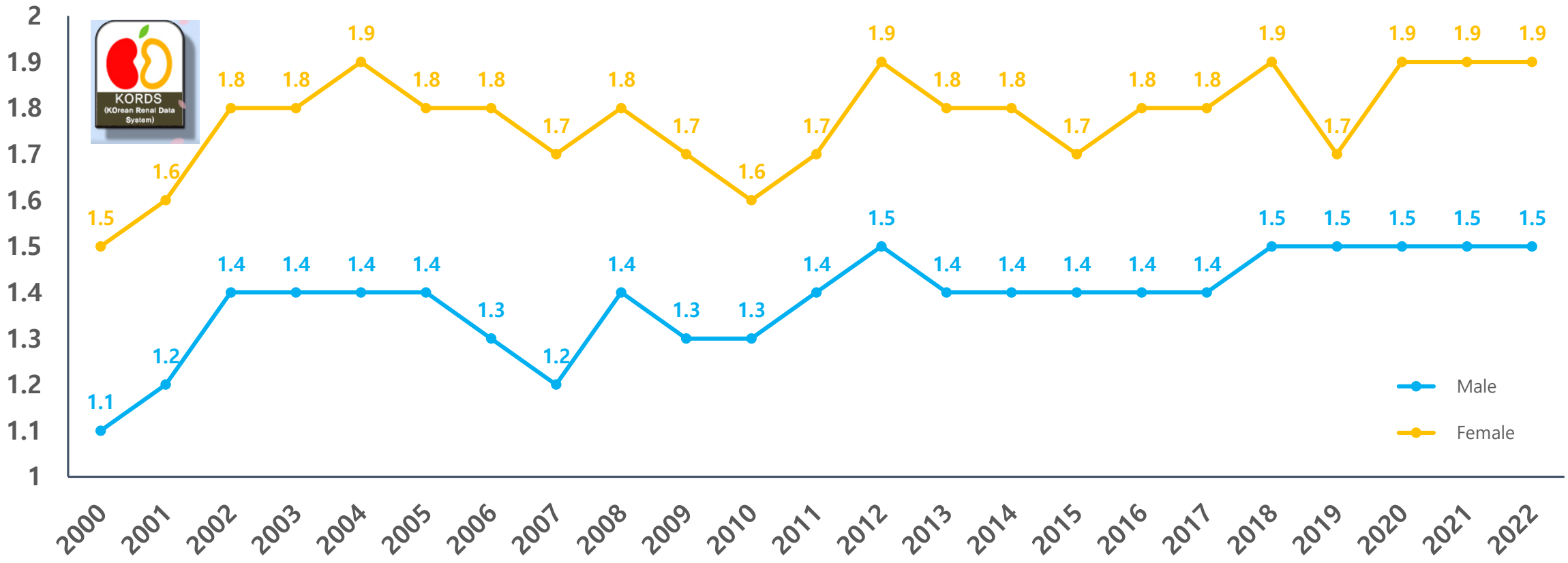
Trends in type of peritoneal dialysis (PD)



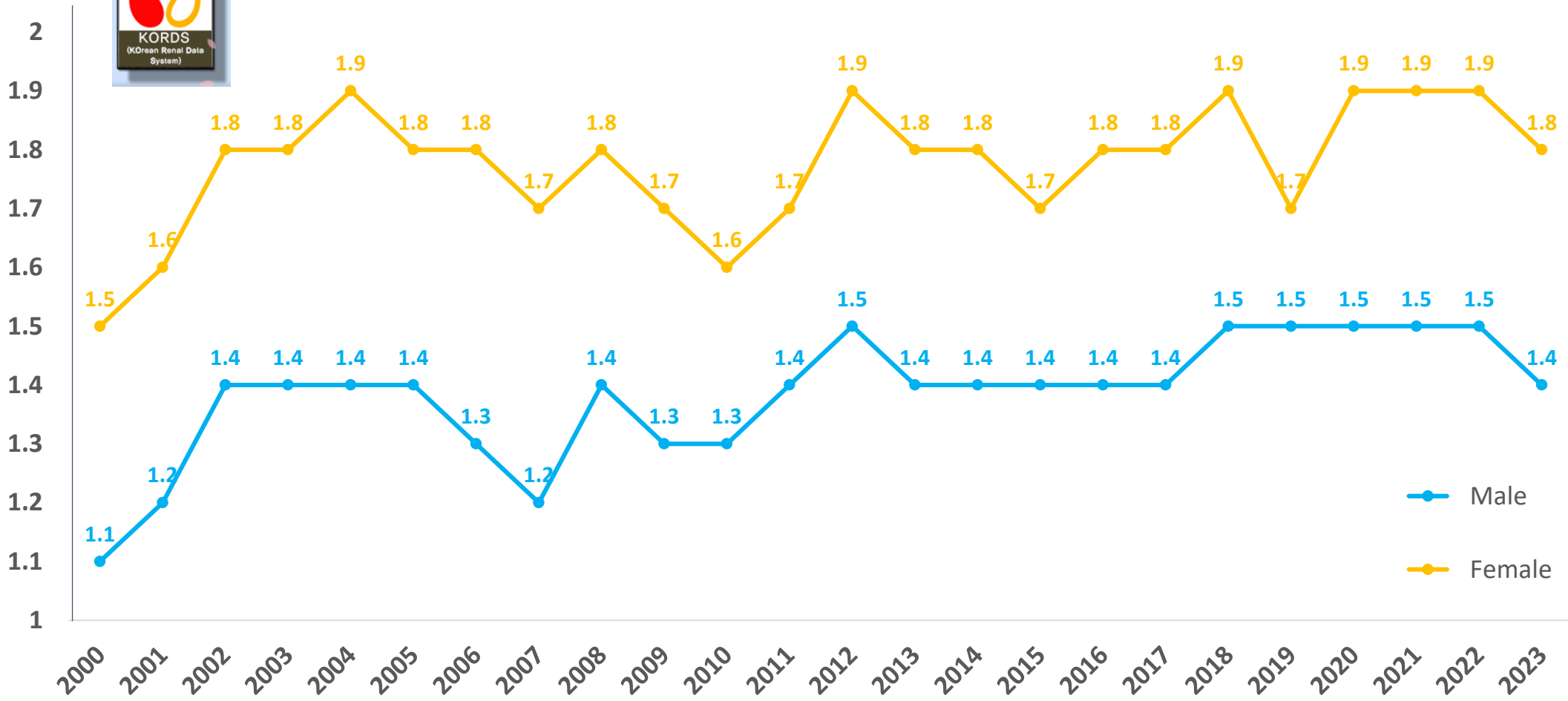

PD Catheter Insertion Break-In Period
KORDS
(KOrean Renal Data System)
2022 7.2 7.6 22.6 52.8 5.9 3.9
5.8 3.1 21.5 57.9 7.6 4
2020 7.4 3.0 24.8 57.1 5.1 2.7
6.6 3.7 27.3 55.3 4.9 2.3
2018 5.5 3.9 27.5 55.8 5 2.3
8.2 4.2 31.5 50.6 3.4 2.1
2016 7.5 5.1 29.2 53.1 3.5 1.6
8.3 5.4 25.1 54.1 4.7 2.5
2014 9.5 12.7 29.6 42.7 3.5 2.0
12.1 13.6 24.1 44.4 4.4 1.3
2012 16.0 7.7 25.6 46.0 2.7 1.9
25.5 6.0 17.3 49.8 0.4 0.9
2010 11.4 8.7 58.7 15.8 1.1 4.3
8.4 19.8 29.3 29.3 6.0 7.2
2008 8.2 10.2 38.8 28.6 14.3
9.4 26.0 26.0 20.8 15.6 2.1
2006 15.5 48.3 13.8 22.4
14.3 14.3 61.9 4.8 4.8
2004 7.1 42.9 14.3 14.3 14.3 7.1
22.2 33.3 18.5 18.5 7.4
2002 28.6 14.3 35.7 7.1 14.3
9.1 45.5 18.2 18.2 9.1
2000 14.3 57.1 28.6
15.8 52.6 15.8 5.3 10.5
확인안됨
당일
1주이내
2주~3주
1개월
1개월이상
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%


Prescriptions of PD dose per day
2022 2.2 5.0 25.4 51.9 12.0
2.3 6.3 24.8 47.6 15.2 3.7
1.0 4.2 23.9 52.5 14.4 4
2020 1.3 4.3 22.5 53.9 14.5 3.6
1.3 4.8 21.4 54.5 15.1 3
2018 1.7 4.0 21.8 60.5 9.6 2.4
2.4 4.3 26.3 56.1 8.8 2.1
2016 2.3 5.3 25.9 49.0 15.5 2.0
4.5 5.3 26.4 53.9 8.2 1.8
2014 2.1 7.4 31.3 48.0 7.8 3.3
2.1 5.9 31.5 52.4 6.8 1.3
2012 1.8 6.9 35.9 47.3 6.3 1.8
1.9 5.4 30.2 53.6 8.9 0.1
2010 2.1 6.1 36.3 47.0 8.4
2.0 4.5 24.9 62.5 6.0 0.1
2008 1.7 8.0 28.0 59.9 2.0 0.1
2.2 10.1 23.1 60.9 3.7 0.1
2006 2.7 9.2 32.9 51.8 3.4
2.2 10.7 21.9 63.1 2.0
2004 2.2 9.1 25.1 60.6 3.2
2.9 7.9 24.4 62.5 2.3
2002 1.2 8.5 23.2 64.8 2.2
3.2 6.1 25.0 63.2 2.5
2000 1.4 5.5 18.9 71.5 2.6 0.0
KORDS (KOrean Renal Data System)
4L미만
4L~6L미만
6L~8L미만
8L~10L미만
10L~12L미만
12L이상
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Adequacy of PD: weekly Kt/V (Dialysate)

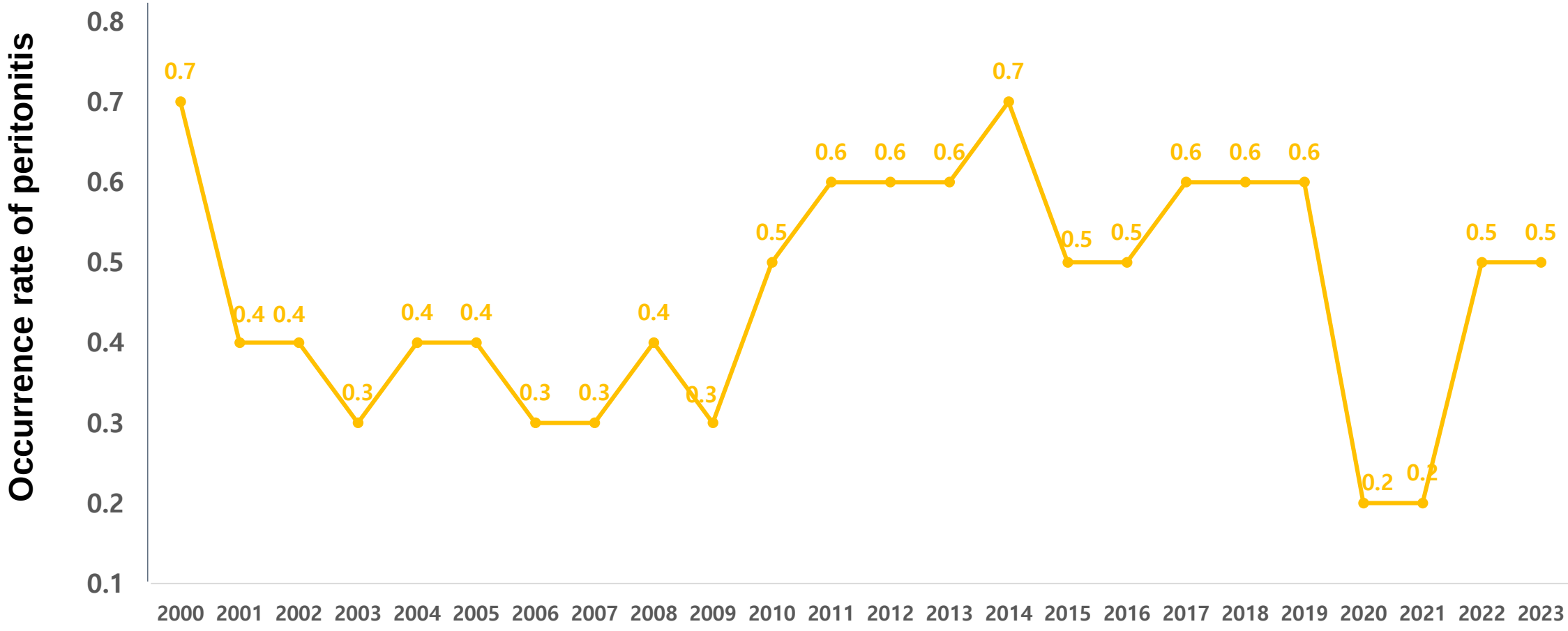


Adequacy of PD: weekly Kt/V (Total)



Trends in Exit infection of PD patients (%)

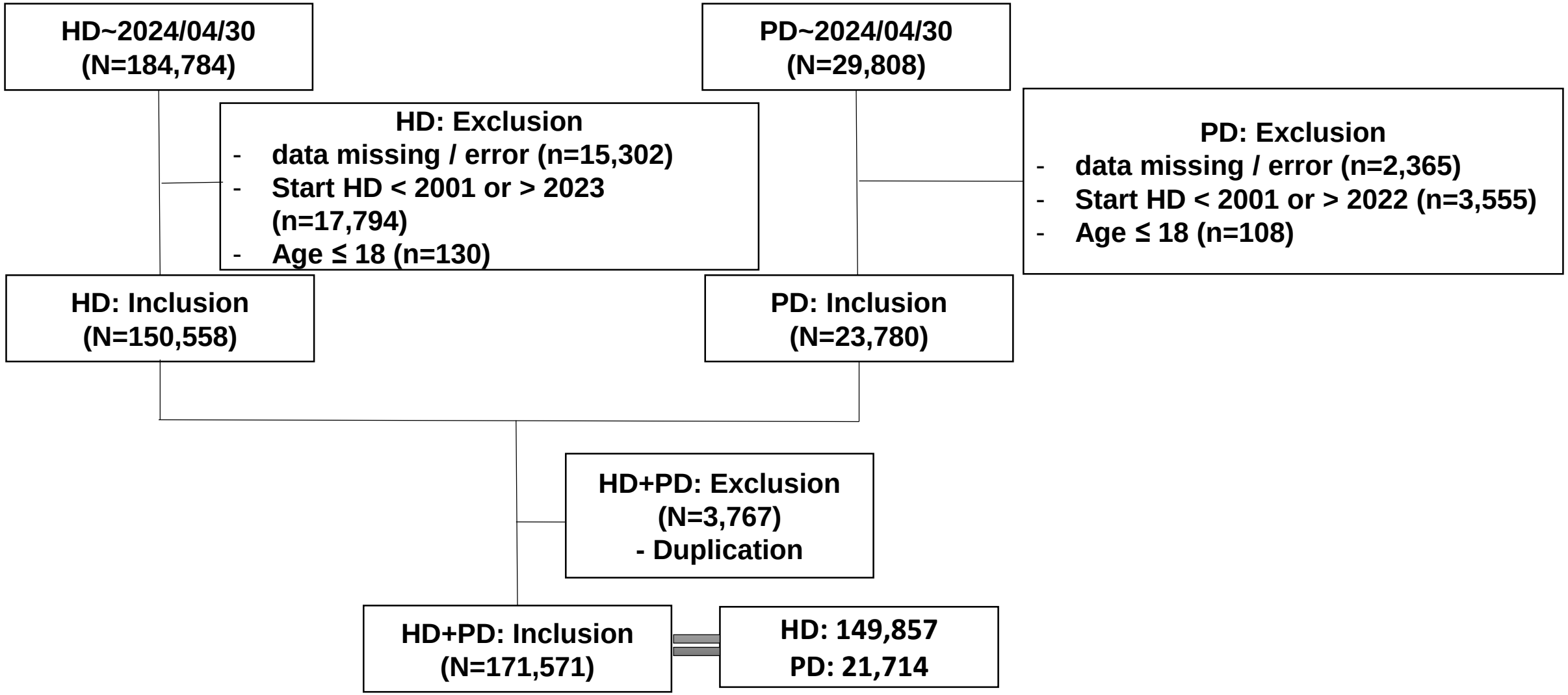
Trends in the occurrence rate of PD-related peritonitis



III. 우리나라 말기신부전 환자의 생존율 변화와 위험인자 (Mortality analysis of ESKD patients in Korea)

Contents

Flow chart of patient selection for the cohort



Hospitalization

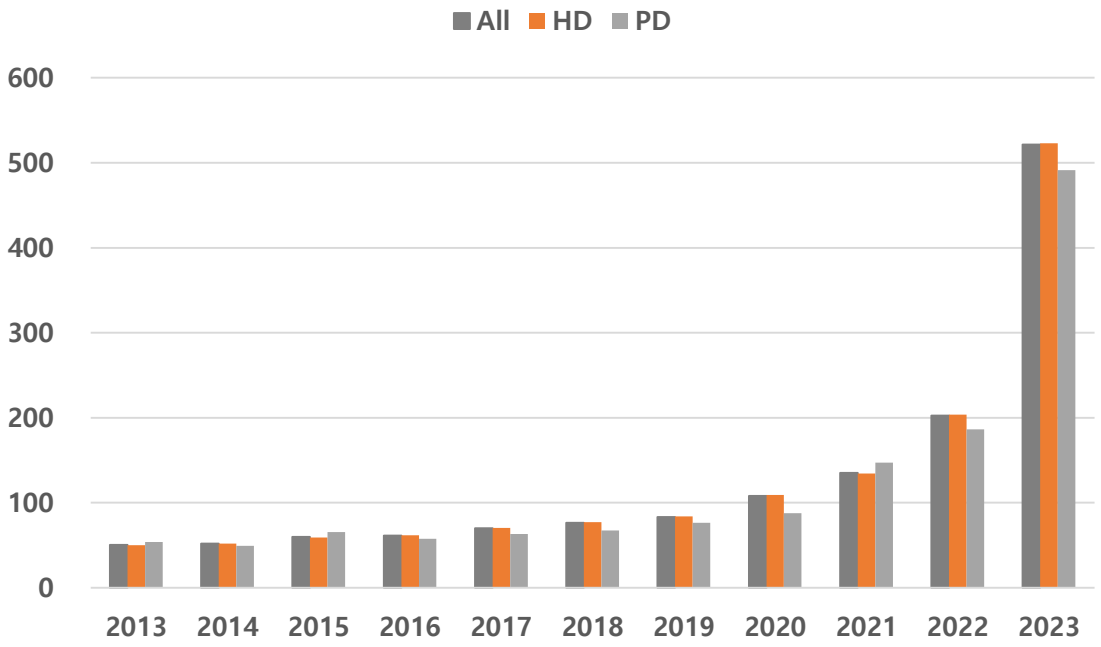
All-cause hospitalization for dialysis patients

Method

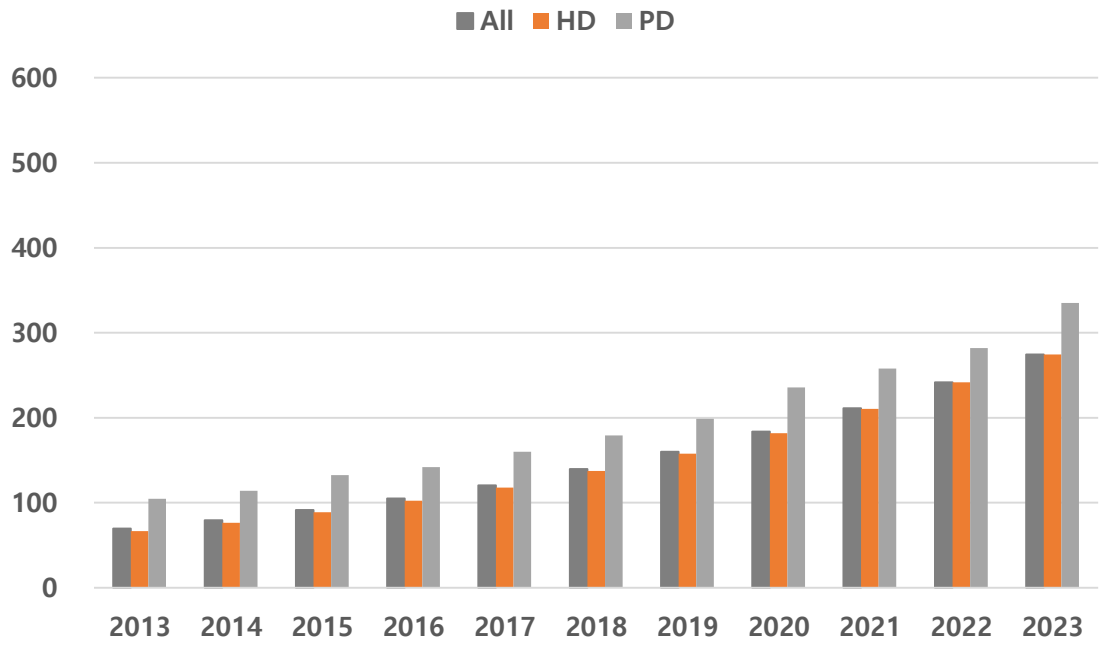
- Enrolled period: 2001.01.01~2023.12.31
- Event end date: 2023.12.31
- Hospitalization: Per 1,000 person-years
- Adjusted: age & sex using Poisson regression model
- R studio version 4.2.1

2024 KORDS annual report: figure 3-1

All-cause hospitalization rates in dialysis patients, by treatment modality (HD and PD), 2013-2023



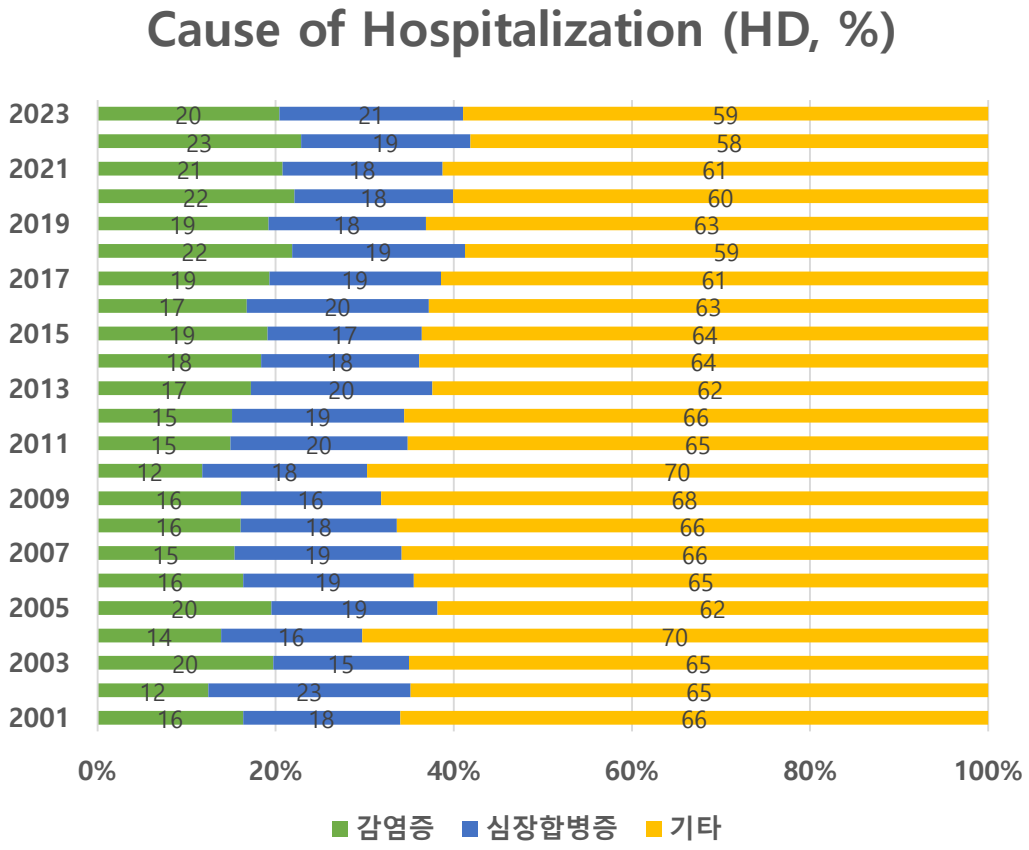
Unadjusted

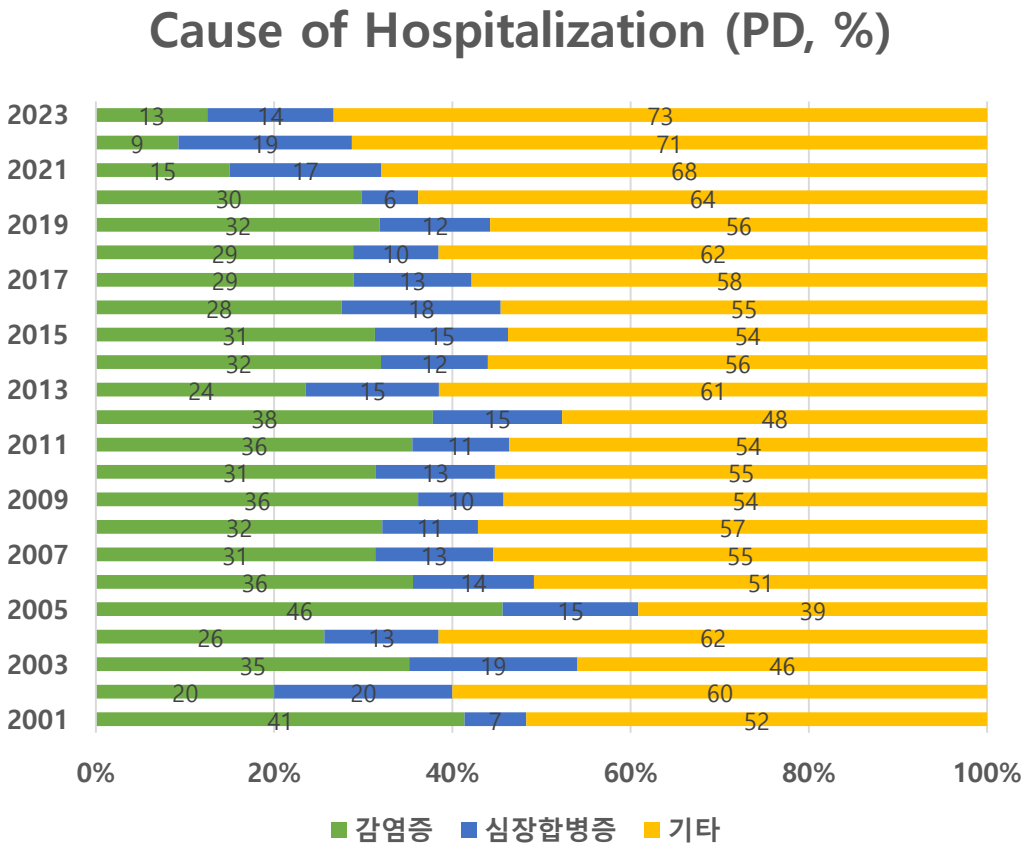


Adjusted by sex

2024 KORDS annual report: figure 3-2

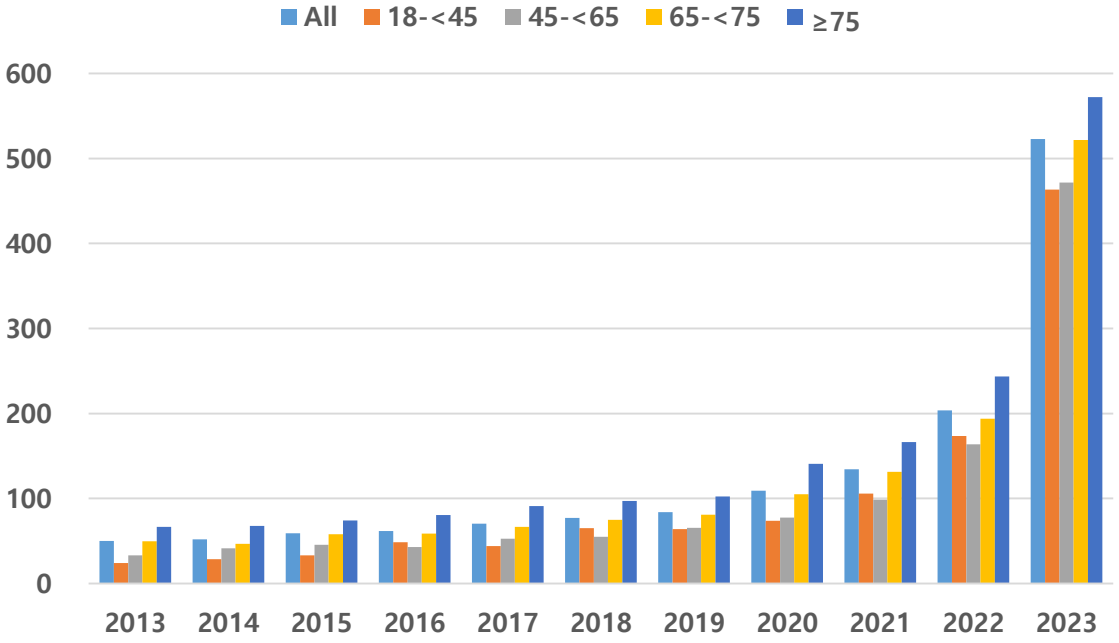
Cause of hospitalization in dialysis patients, 2013-2022



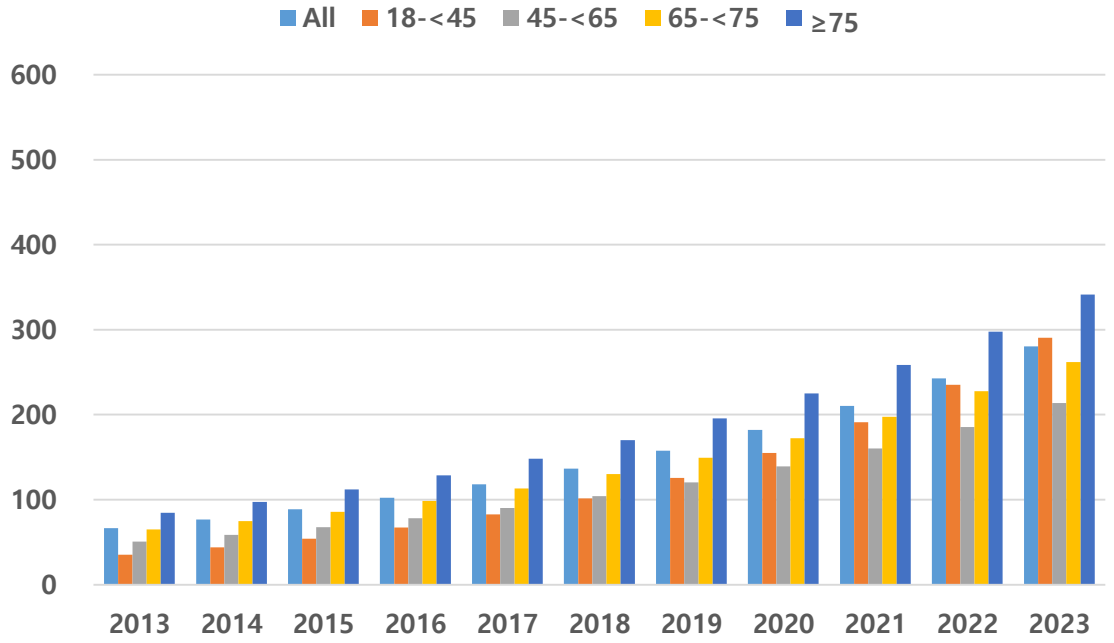


2024 KORDS annual report- figure 3-3

All-cause hospitalization rates in HD patients, by age, 2013-2023



Unadjusted

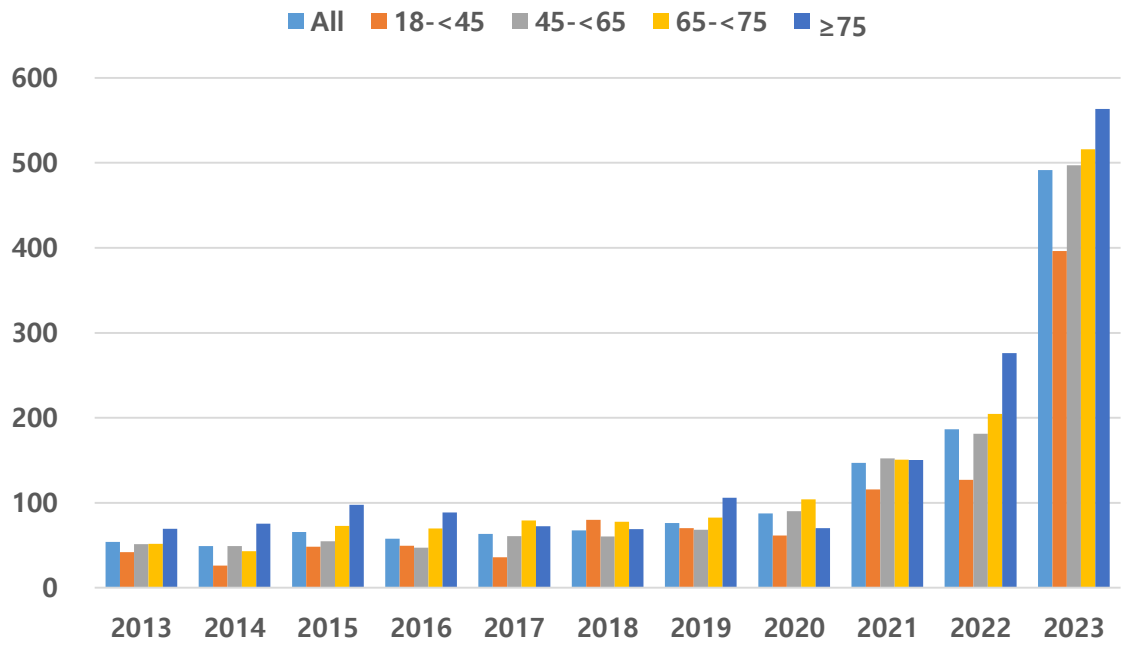


Adjusted by sex

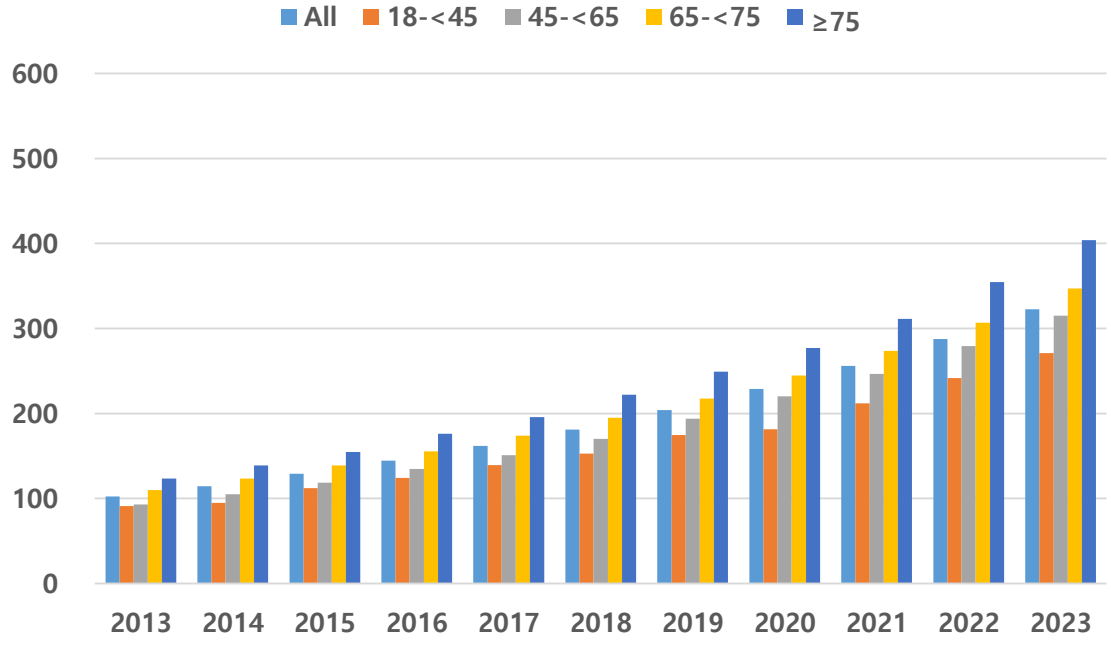
2nd leading hospitalization rates among patients aged 18-<45

2024 KORDS annual report- figure 3-4

All-cause hospitalization rates in PD patients, by age, 2013-2023



Unadjusted



Adjusted by sex

Hospitalization rates tend to increase with age

Mortality

All-cause mortality for dialysis patients

Method

- Enrolled period: 2001.01.01~2023.12.31
- Event end date: 2023.12.31
- Mortality

  1) Per 1,000 person-years for death rate: Poisson regression model

     ⇒ Adjusted by age and sex

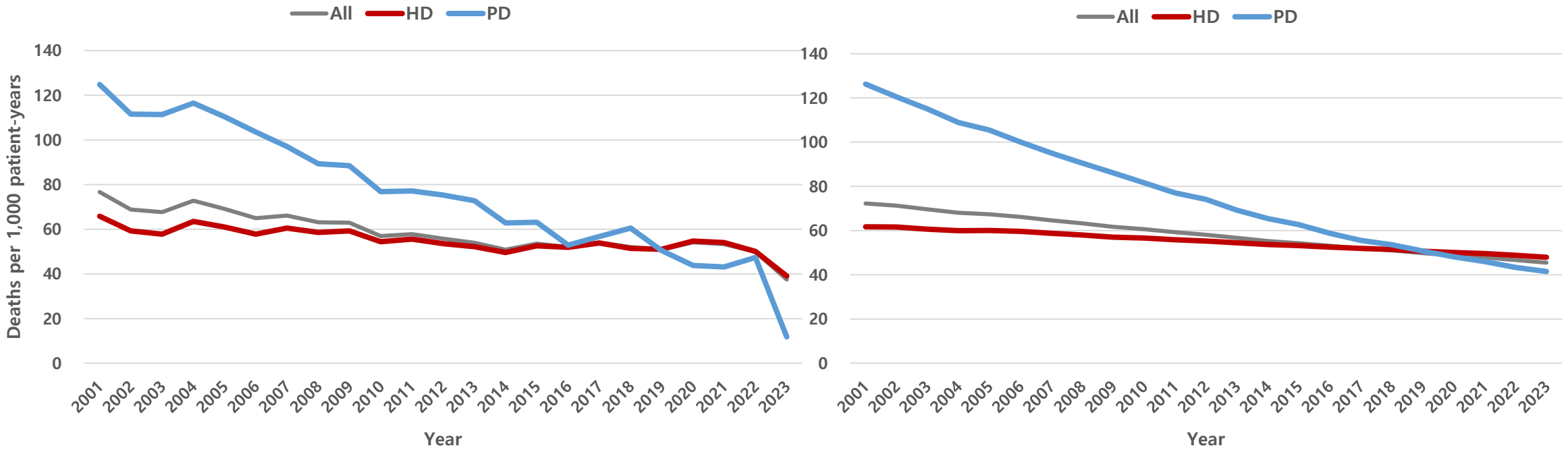
  2) Survival probability: Cox regression model

     ⇒ Adjusted by age, sex, the year of dialysis onset

     ⇒ Transplant as competing risk

- R studio version 4.2.1

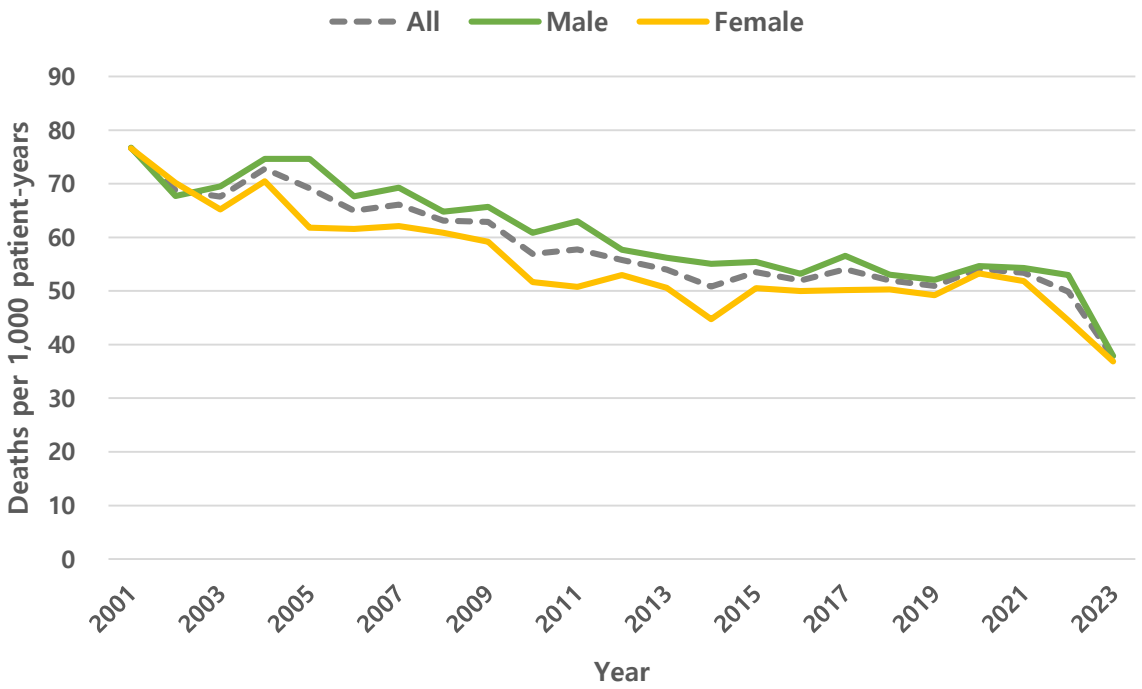
All-cause mortality in dialysis patients, by treatment modality (HD and PD), 2001-2023



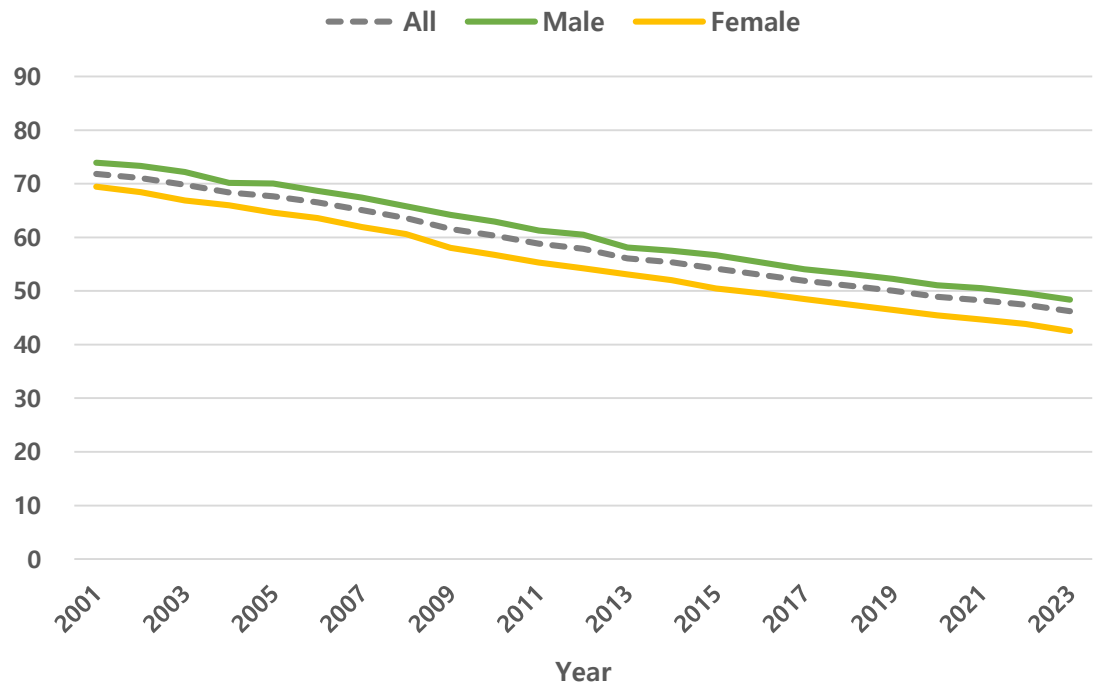
Unadjusted

Adjusted by age

All-cause mortality in dialysis patients, by sex (male and female), 2001-2023



Unadjusted



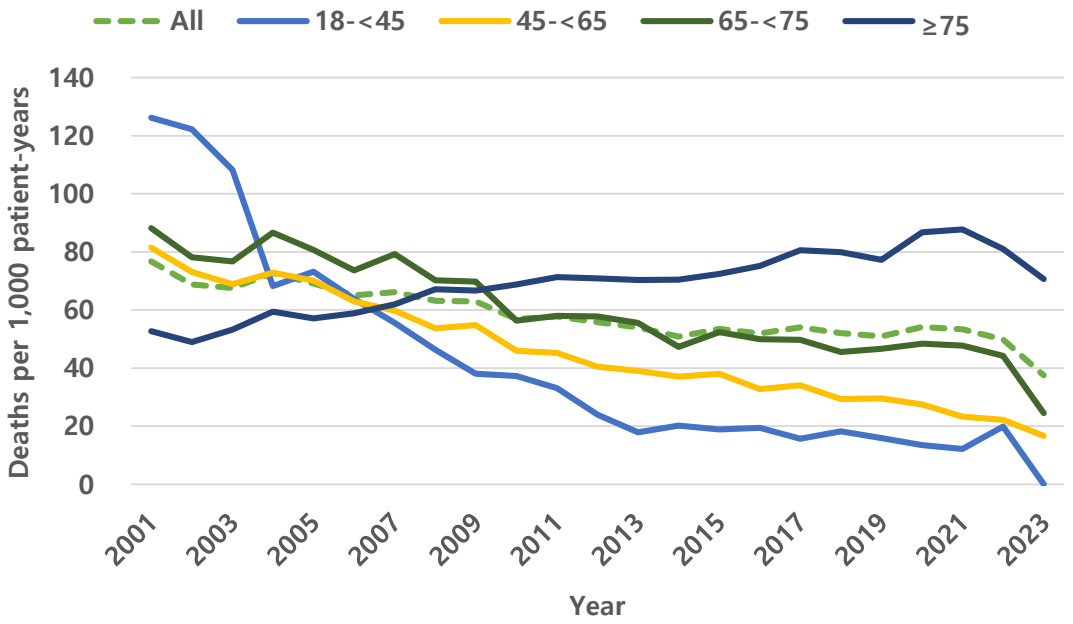
Adjusted by age & modality

Mortality: Male > Female

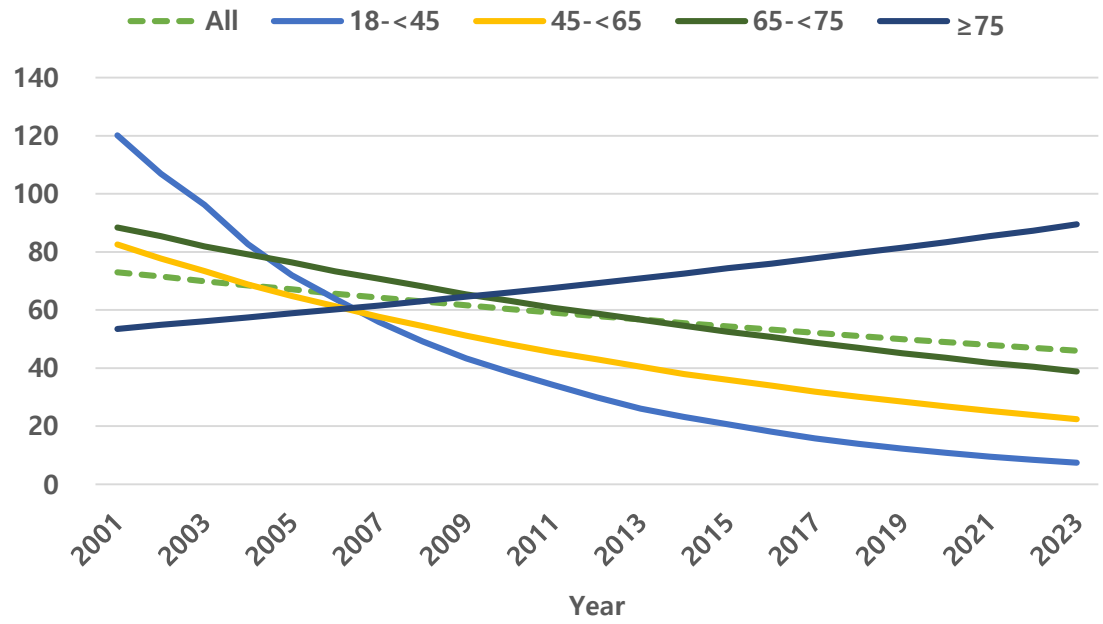
2024 KORDS annual report: figure 3-7

All-cause mortality in dialysis patients, by 4 age group, 2001-2023

KORDS	2022 (%)	2023 (%)
18- <45	4.7 ↓	4.0
45- <65	32.5	29.7
65- <75	26.6	27.2
≥75	36.1 ↑	39.2

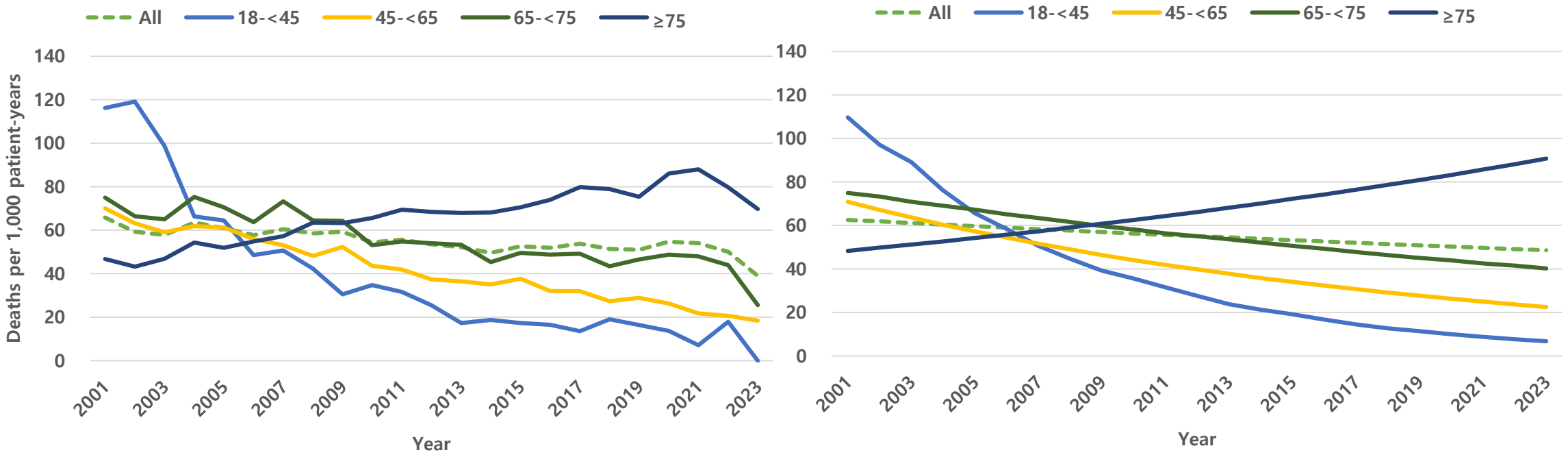


Unadjusted



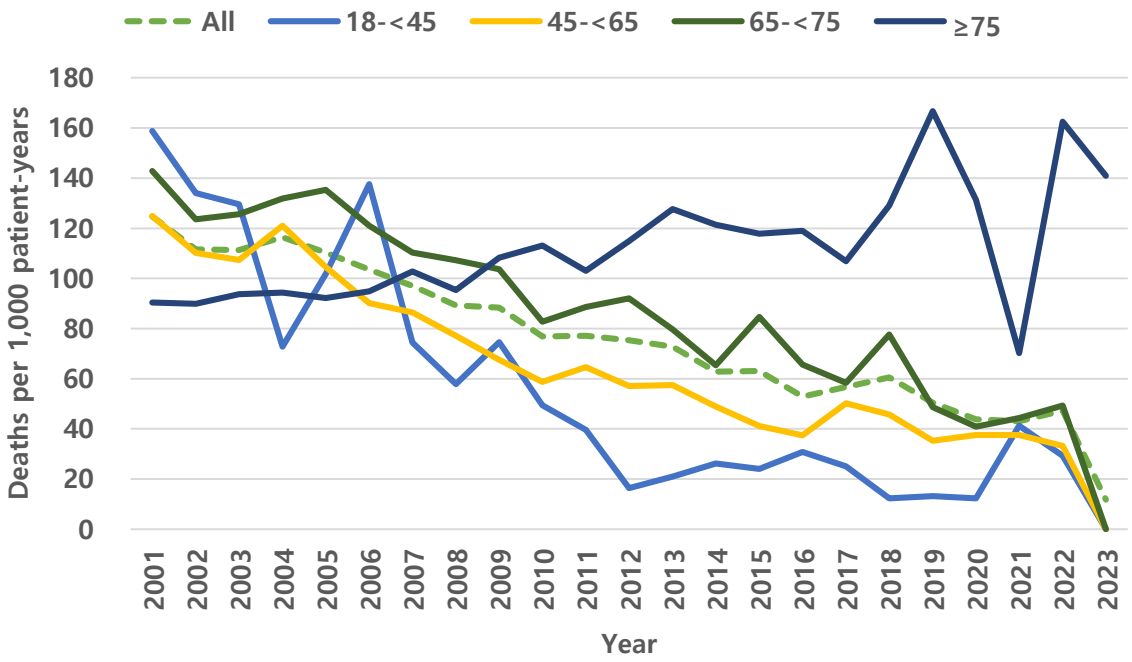
Adjusted by sex

All-cause mortality in HD patients, by 4 age group, 2001-2023

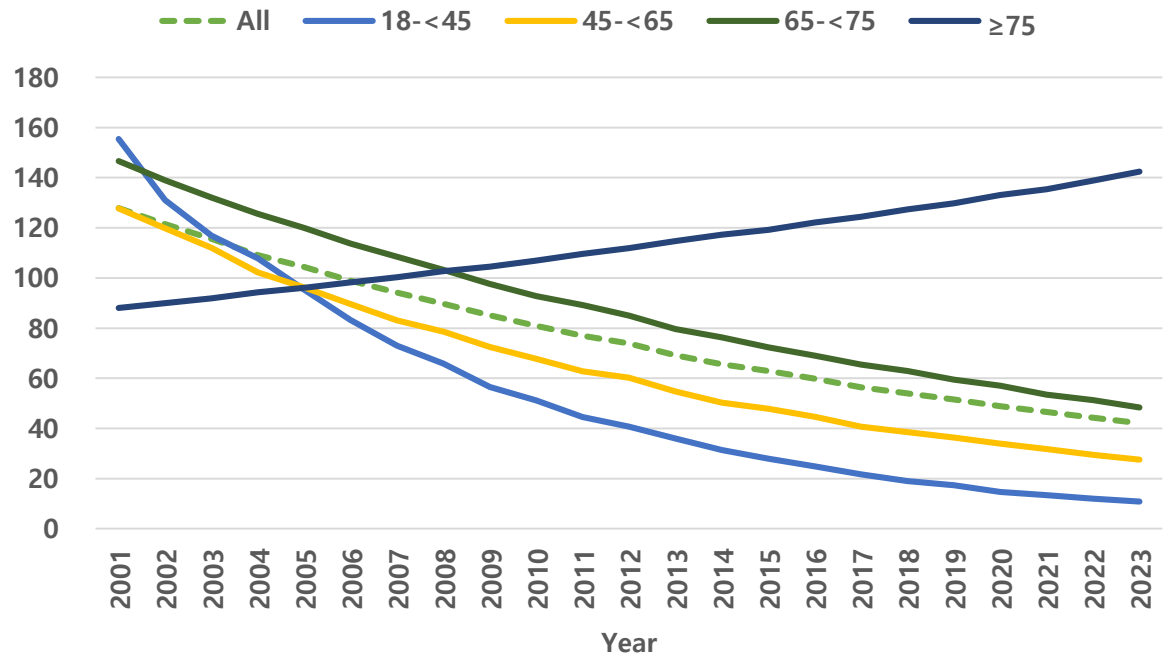


Unadjusted **Adjusted by sex**

All-cause mortality in PD patients, by 4 age group, 2001-2023

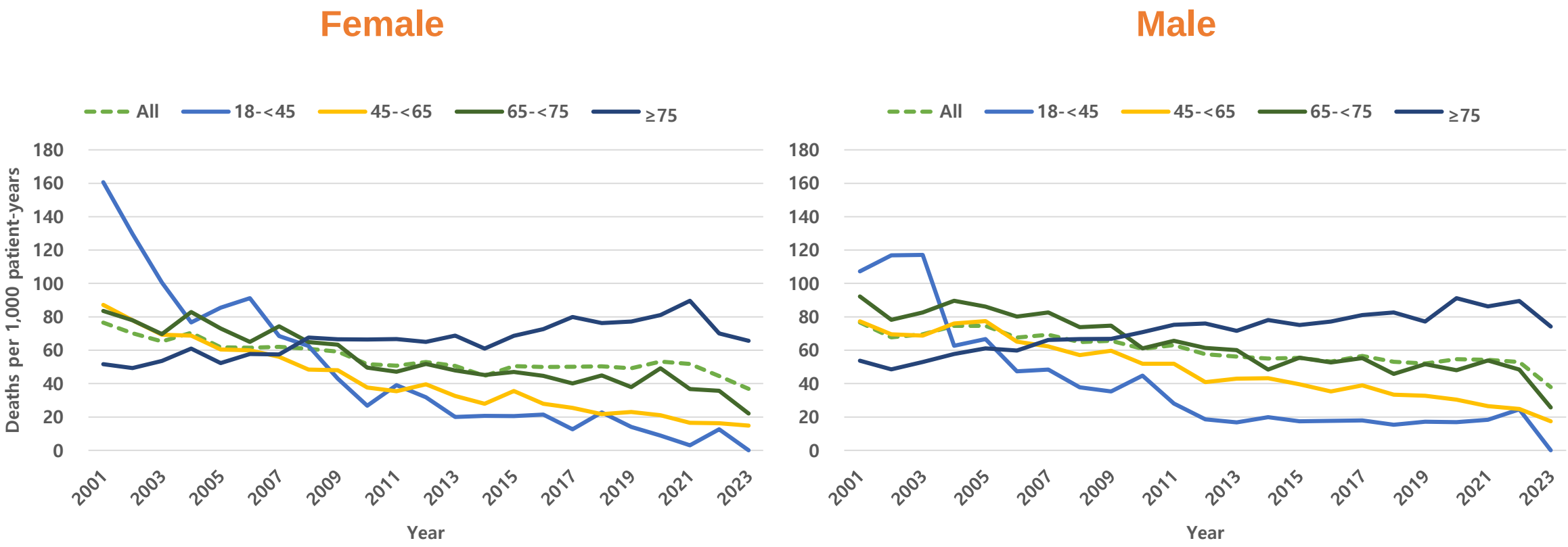


Unadjusted



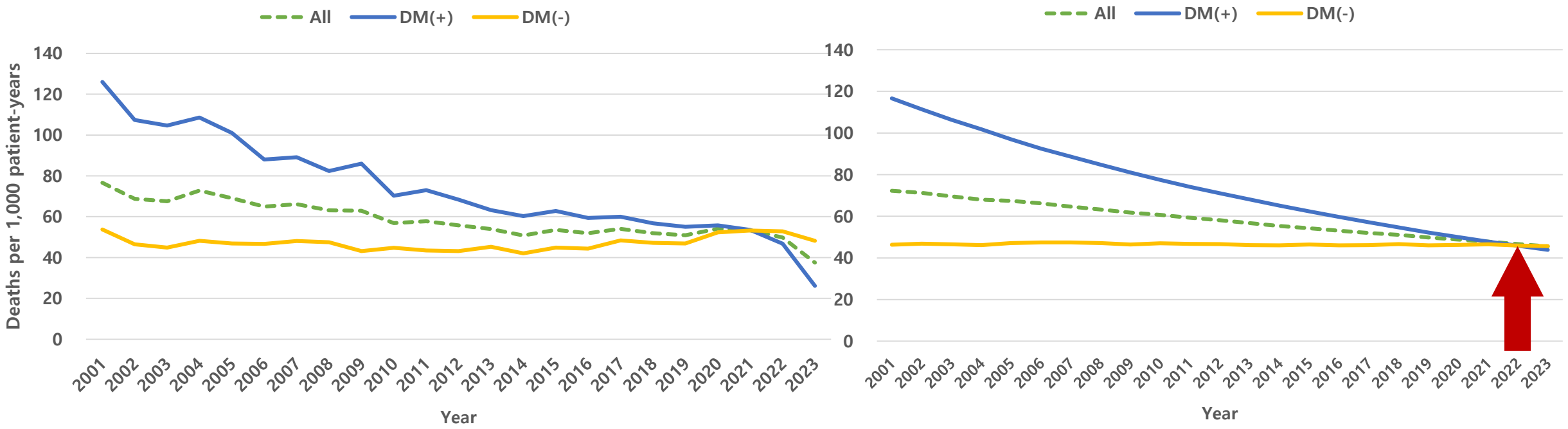
Adjusted by sex

All-cause mortality in dialysis patients, by 4 age group across sex, 2001-2023: Unadjusted



2024 KORDS annual report: figure 3-8

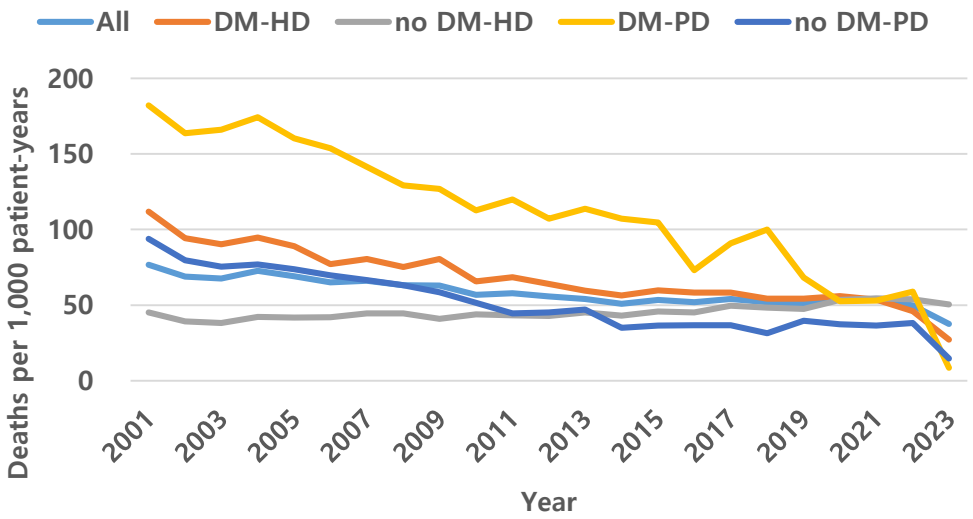
All-cause mortality in dialysis patients, by DM, 2001-2023



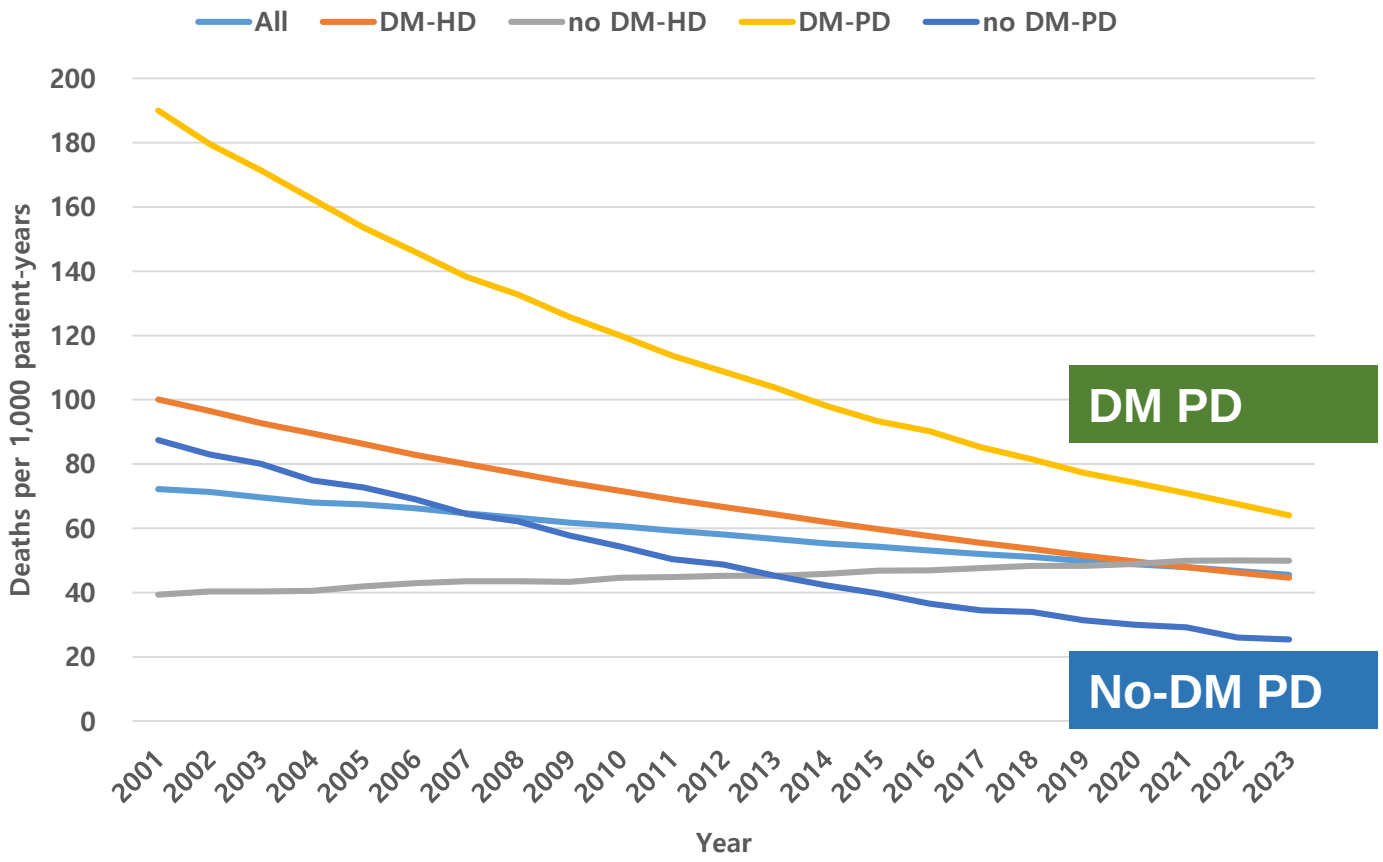
Unadjusted

Adjusted by age, sex

All-cause mortality in dialysis patients by DM and treatment modality (HD and PD), 2001-2023



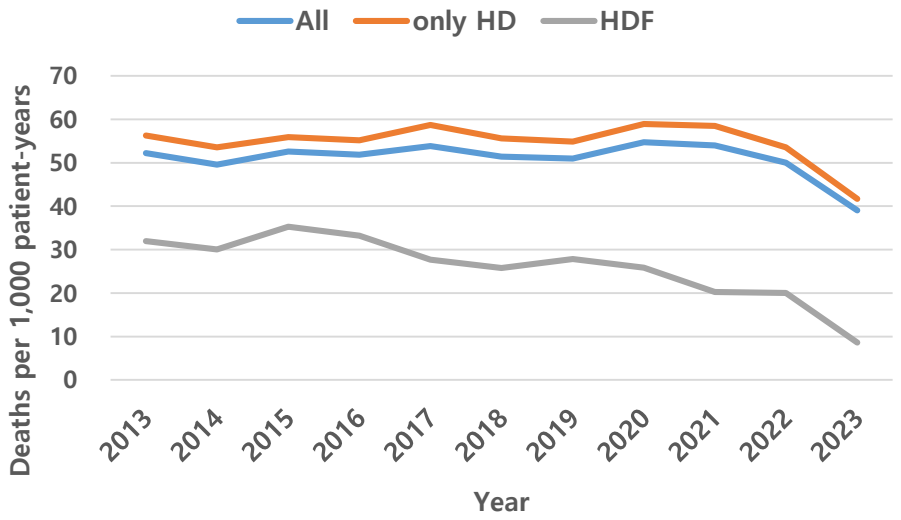
Unadjusted



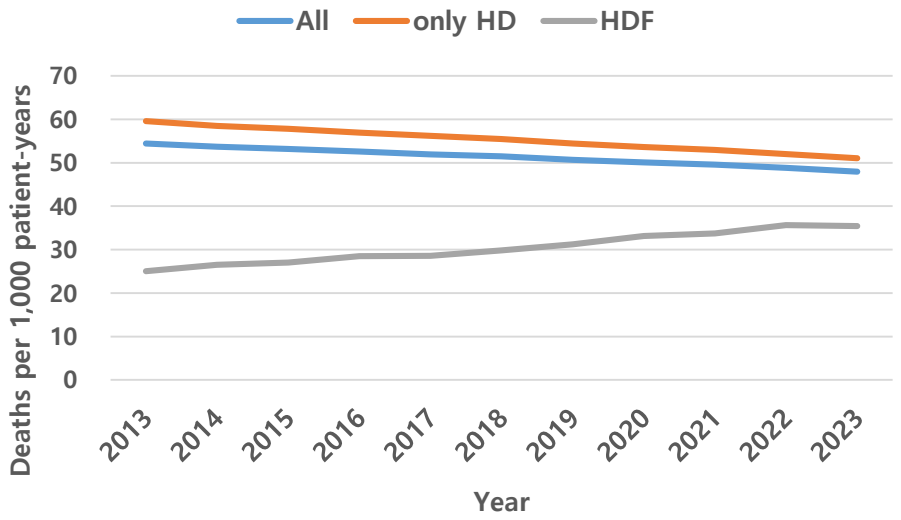
Adjusted by age, sex

DM PD: 가장 빠르게 mortality 감소
DM HD & No DM PD: 꾸준히 mortality 감소
No DM HD: 서서히 mortality 증가

All-cause mortality in hemodialysis patients, by HD technique (HD vs HDF), 2013-2023

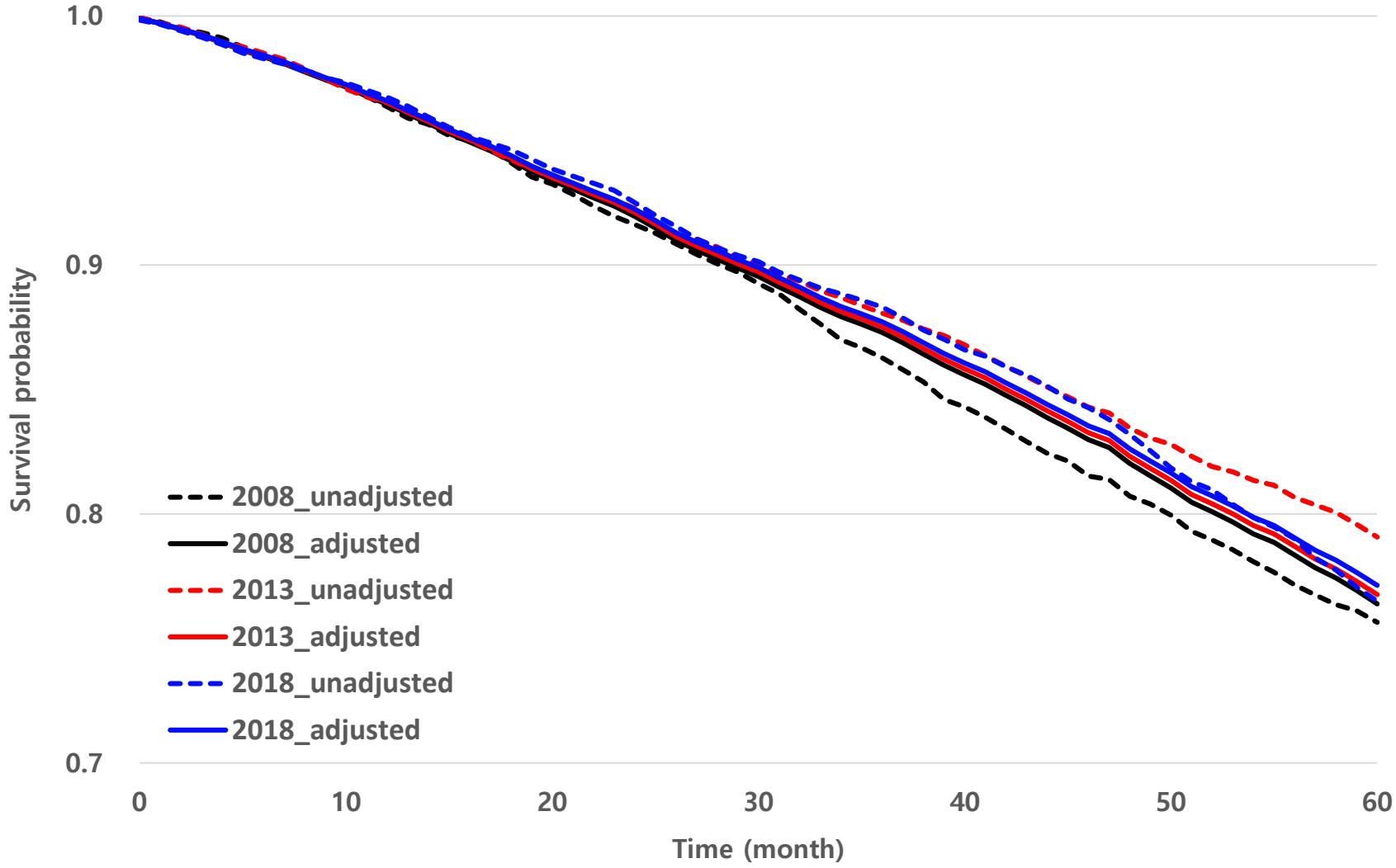


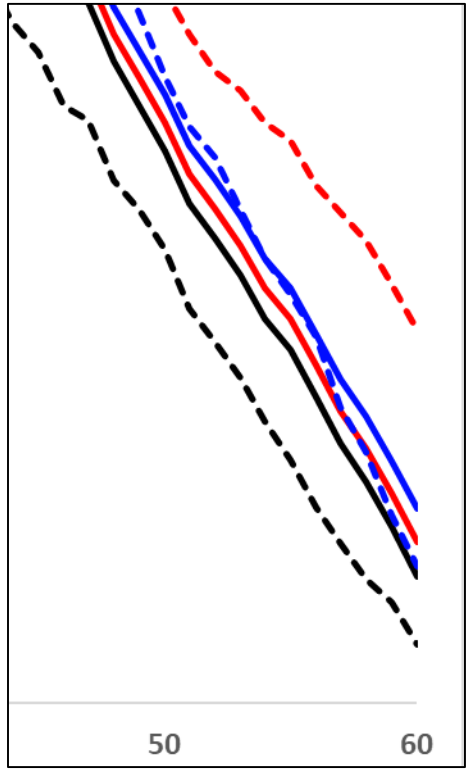
Unadjusted



Adjusted by age, sex

Survival probability of incident ESRD patients over the first 5 years after HD and year of ESRD onset, 2008, 2013, and 2018

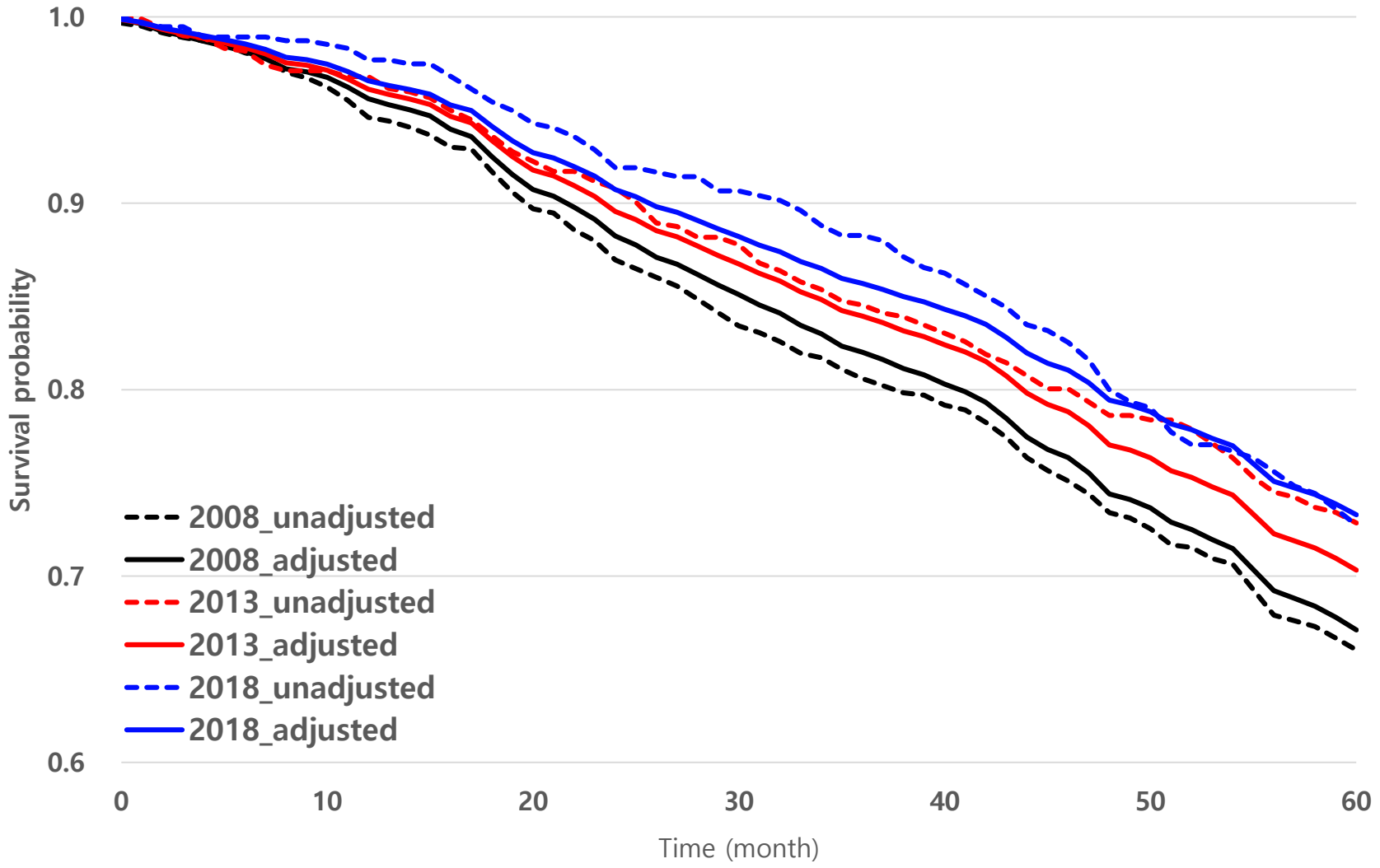




< 5년 생존율>
2008년: 76.4%
2013년: 76.8%
2018년: 77.1%

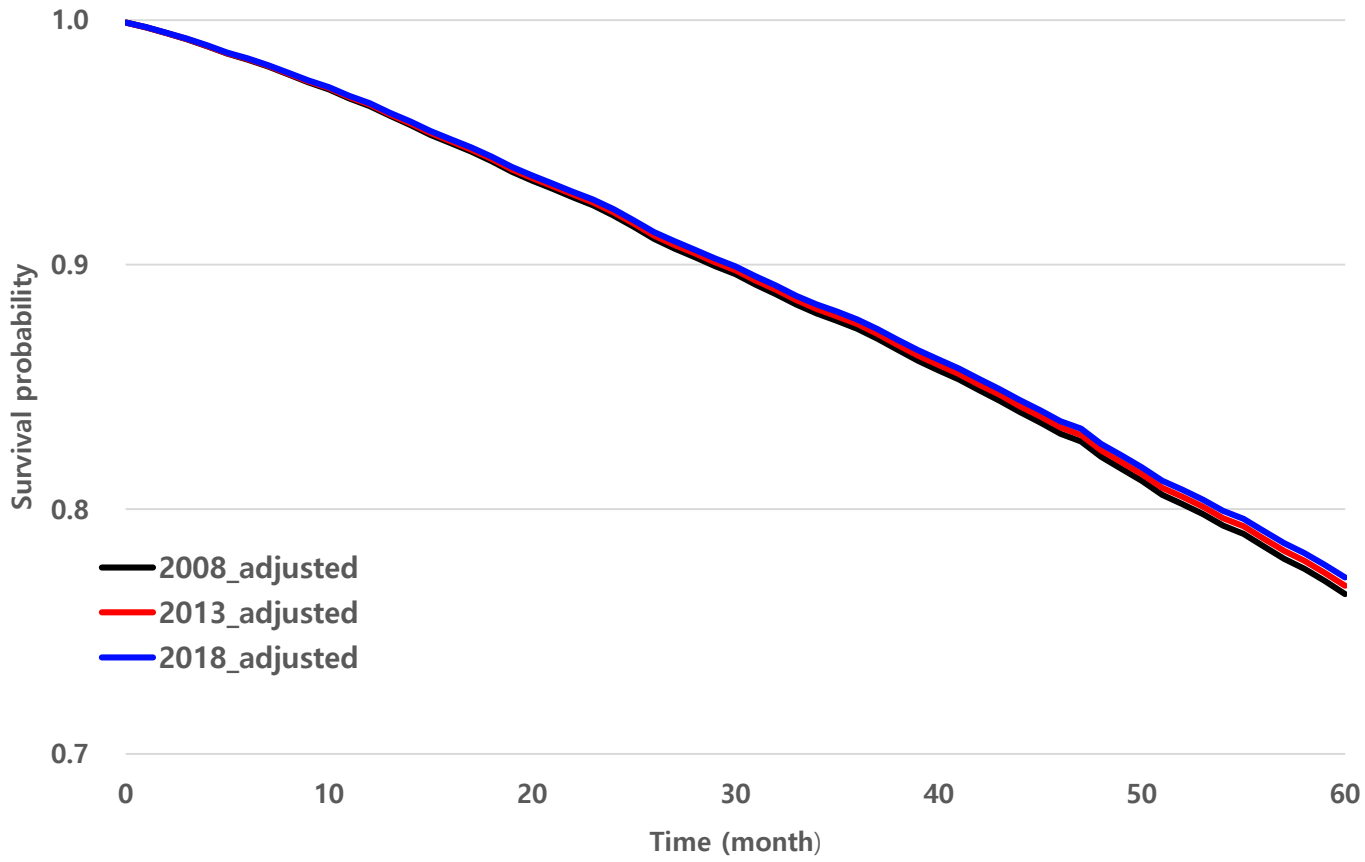
2024 KORDS annual report : figure 3-12

Survival probability of incident ESRD patients over the first 5 years after HD and year of ESRD onset, 2008, 2013, and 2018



< 5년 생존율>
2008년: 67%
2016년: 70%
2018년: 73%

Transplant as competing risk in the Survival probability of incident ESRD patients over the first 5 years after HD and year of ESRD onset, 2008, 2013, and 2018



< 5년 생존율>
2008년: 76.4%
2013년: 76.8%
2018년: 77.1%

Transplant as competing risk

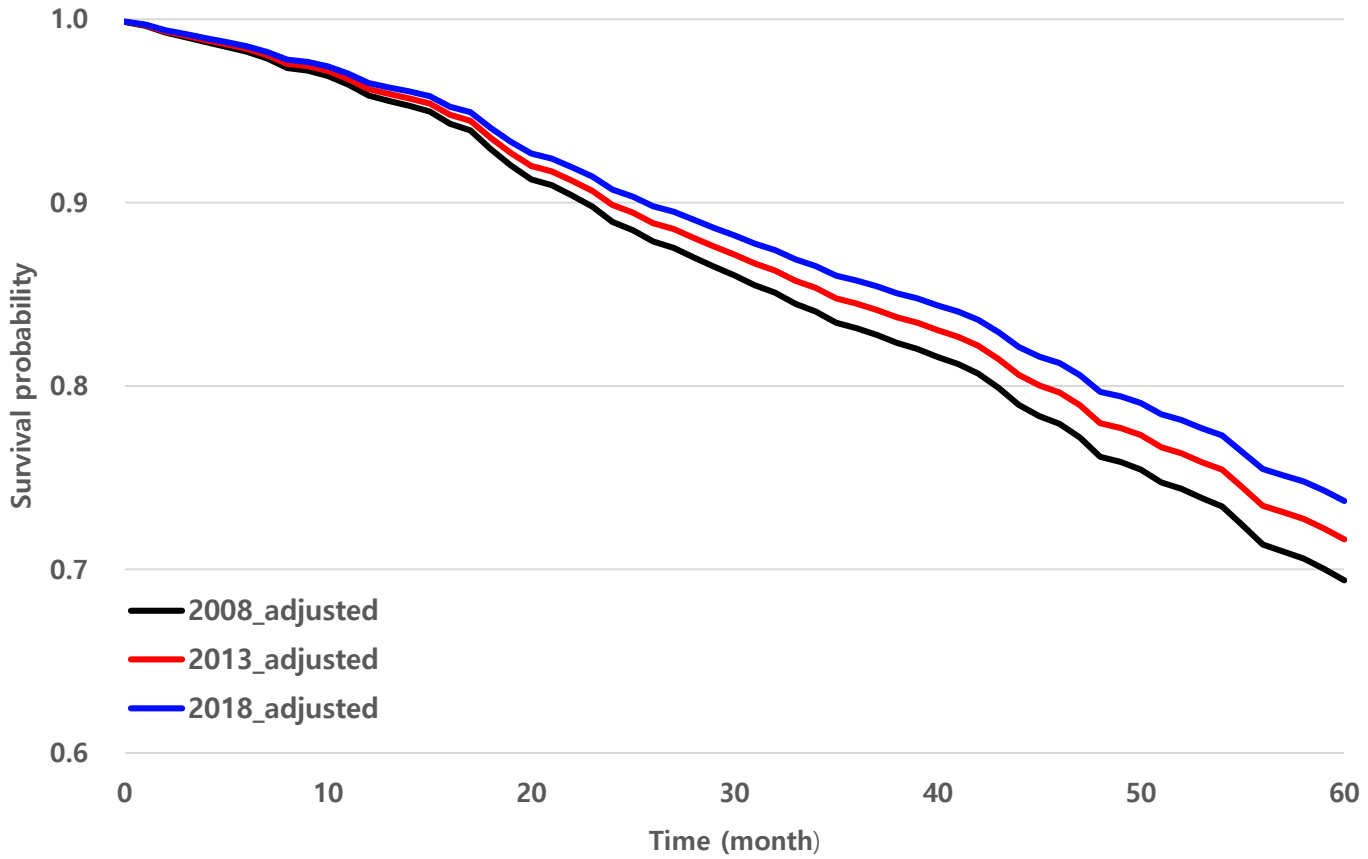
< 5년 생존율>
2008년: 76.5%
2013년: 76.9%
2018년: 77.2%

Transplant as competing risk in the Survival probability of incident ESRD patients over the first 5 years after PD and year of ESRD onset, 2008, 2013, and 2018

< 5년 생존율>
2008년: 67%
2016년: 70%
2018년: 73%

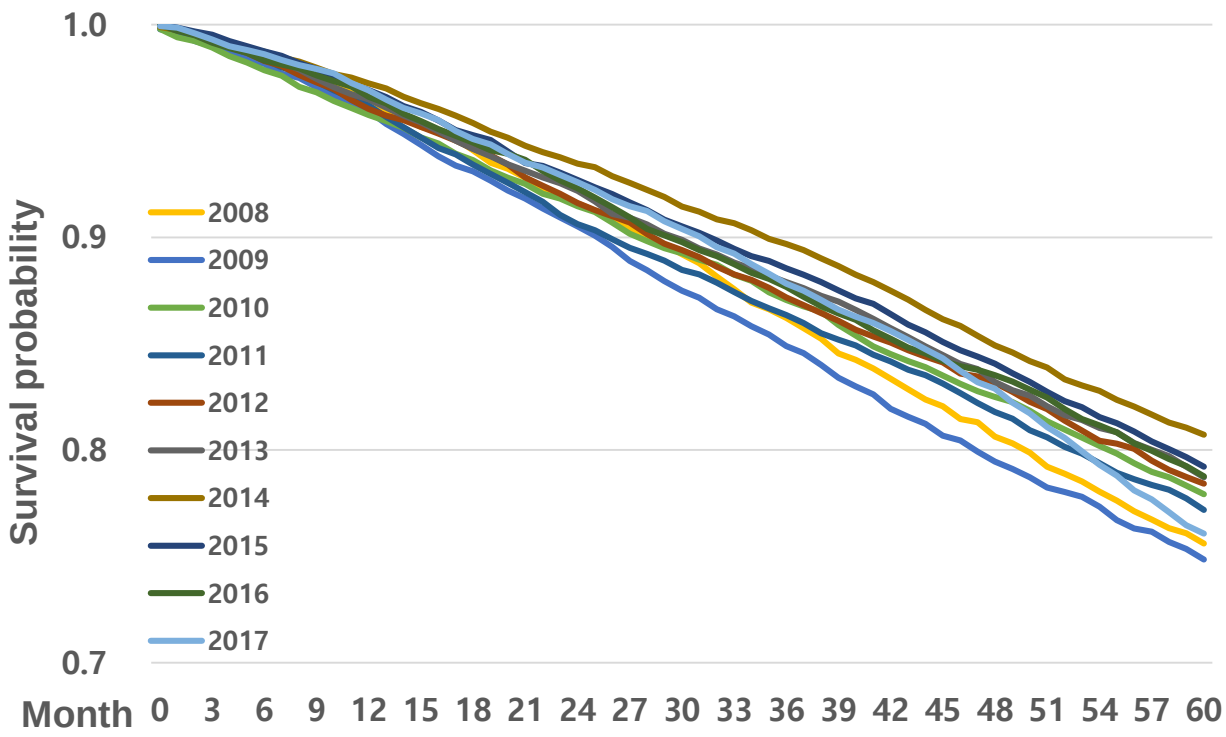
Transplant as competing risk

< 5년 생존율>
2008년: 69%
2016년: 72%
2018년: 74%

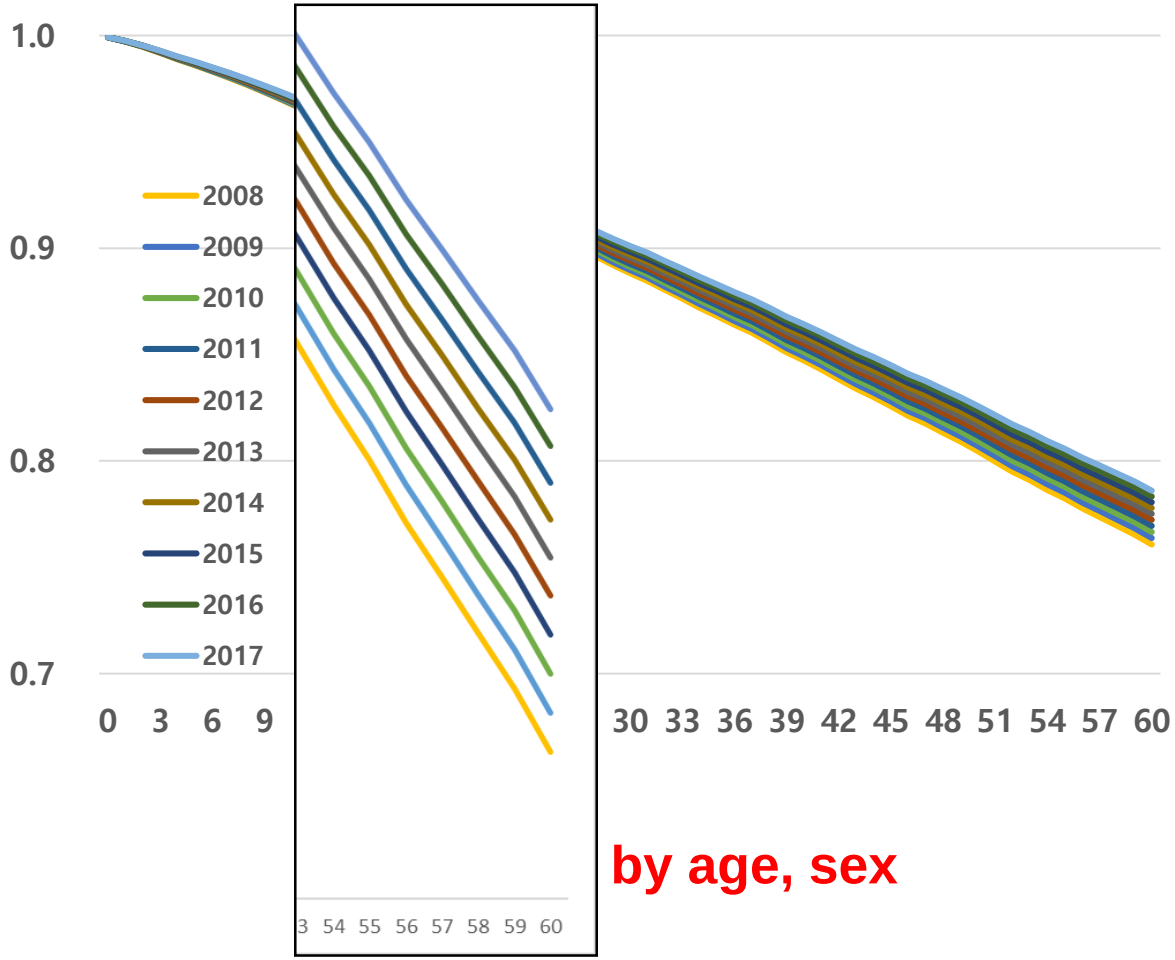


2024 KORDS annual report : figure 3-15

Survival of incident HD patients over the first 5 years, year of ESRD onset, from 2008 until 2017



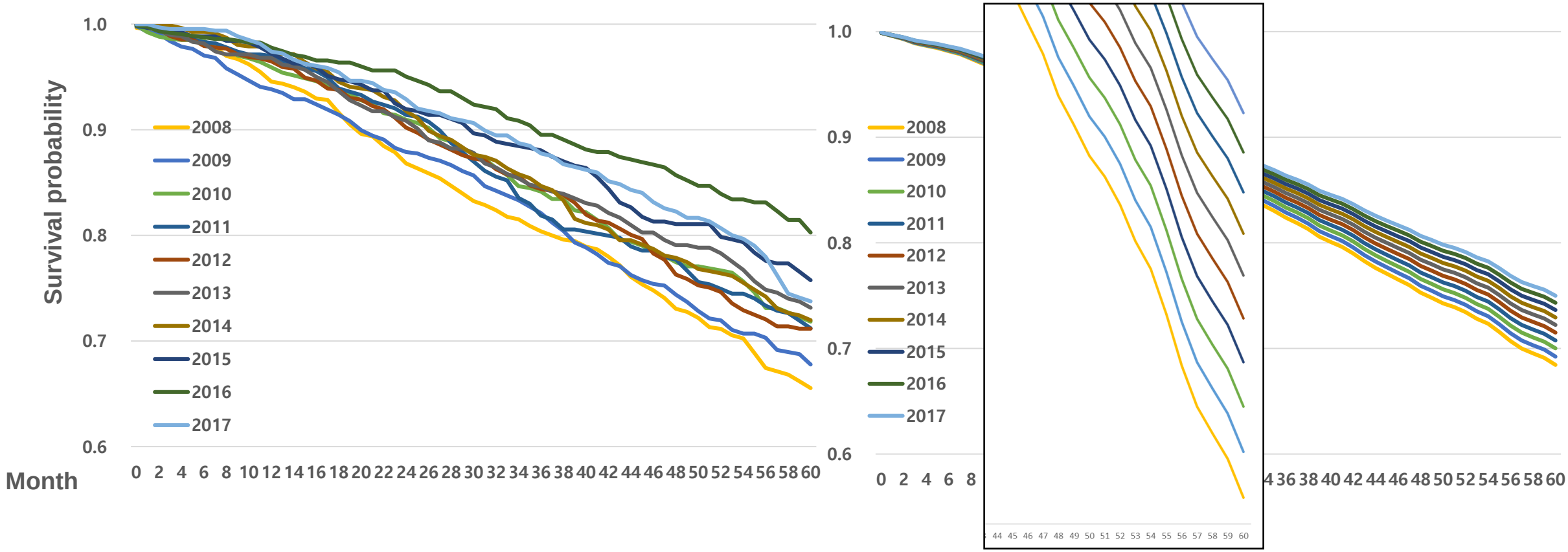
Unadjusted



by age, sex

2024 KORDS annual report : figure 3-16

Survival of incident PD patients over the first 5 years, year of ESRD onset, from 2008 until 2017



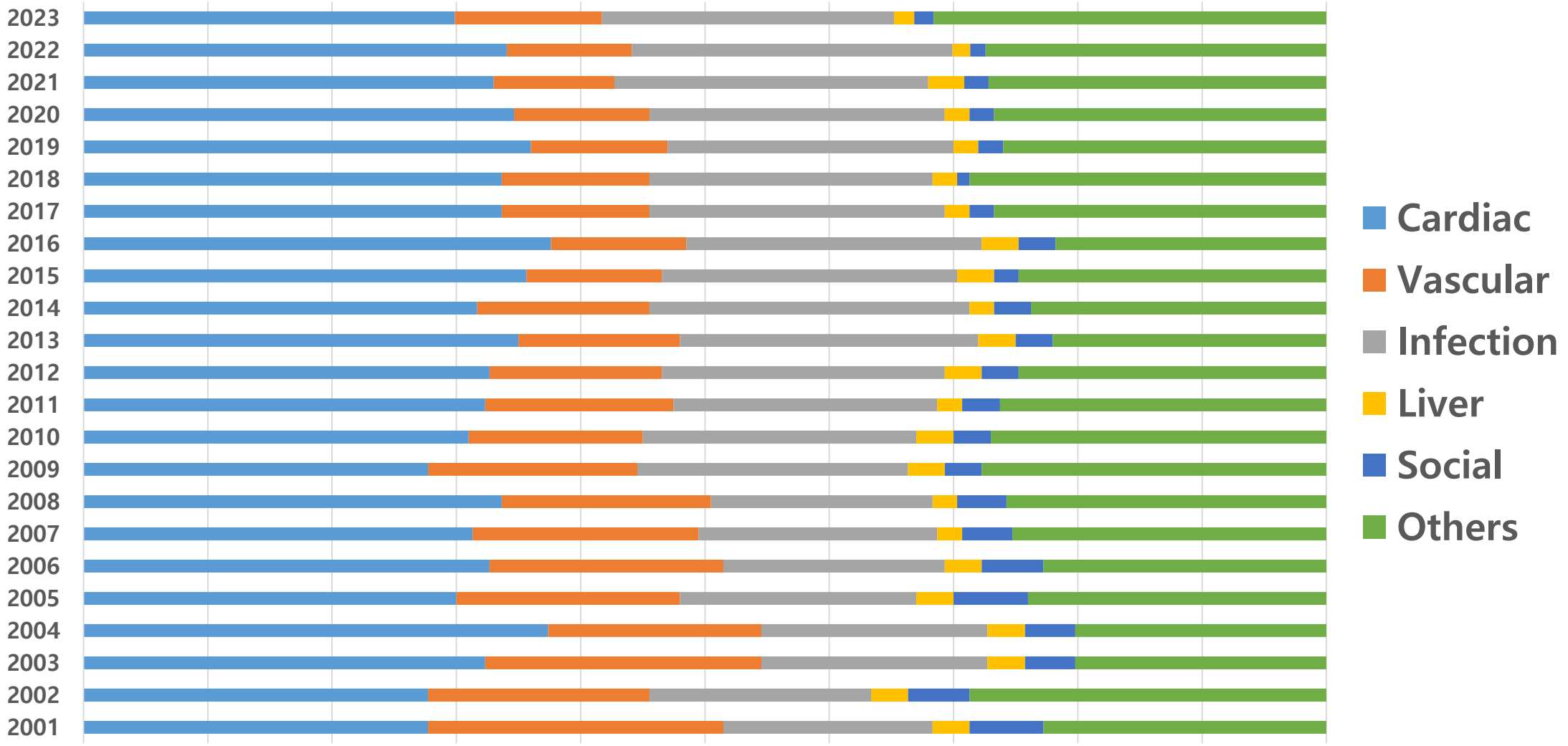
Unadjusted

Adjusted by age, sex

Causes of deaths

2024 KORDS annual report : figure 3-17

Comparison of cause-specific death



대한신장학회
THE KOREAN SOCIETY OF NEPHROLOGY

Acknowledgements

- 대한신장학회 안산기념 등록사업에 참여해 주신 전국의 투석실 선생님
- 대한신장학회 등록위원회
  - 이사: 김용균(가톨릭의대), 안선호 (원광의대)
  - 간사: 반태현 (가톨릭의대) 김수현 (중앙의대)
  - 위원: 구호석 (인제의대), 김경민 (을지의대), 김기원 (서울원내과), 김태희 (인제의대), 김지현 (서울의대) 윤창연 (윤영석내과), 윤혜은 (가톨릭의대), 이하정 (서울의대), 최선령 (한림의대), 홍유아 (가톨릭의대), 황선덕 (인하의대)
- 통계
  - 정선아 (대한신장학회)