Table S1. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (SD)[*]

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 600619)	2881	1935437.38	1.48855	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 600684)	2862	1923796.05	1.48768	**1.098 (1.043-1.156)**	**1.121 (1.064-1.180)**	**1.114 (1.058-1.174)**
Q3 (n = 600749)	3070	1915550.80	1.60267	**1.166 (1.108-1.227)**	**1.178 (1.119-1.239)**	**1.163 (1.104-1.225)**
Q4 (n = 600616)	3168	1899121.35	1.66814	**1.282 (1.218-1.349)**	**1.311 (1.246-1.380)**	**1.276 (1.207-1.350)**
P for trend				<0.0001	<0.0001	<0.0001

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: SD, standard deviation; eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate, while the standard deviation (SD) was used to assess variability. [†]Range of eGFR variability (SD): Q1 (0.05 ≤ SD < 5.62), Q2 (5.62 ≤ SD < 8.90), Q3 (8.90 ≤ SD < 14.31), Q4 (14.31 ≤ SD ≤ 178.58).

Table S2. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (CV)[*]

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 600679)	2649	1936106.60	1.36821	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 600663)	2738	1916466.57	1.42867	**1.104 (1.046-1.166)**	**1.143 (1.082-1.206)**	**1.122 (1.062-1.186)**
Q3 (n = 600600)	3055	1918365.98	1.59250	**1.161 (1.102-1.223)**	**1.162 (1.103-1.224)**	**1.142 (1.083-1.203)**
Q4 (n = 600726)	3539	1902966.42	1.85973	**1.355 (1.287-1.426)**	**1.349 (1.281-1.421)**	**1.294 (1.227-1.365)**
P for trend				<0.0001	<0.0001	<0.0001

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: CV, coefficient of variation; eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate, while the coefficient of variation (CV) was used to assess variability. [†]Range of eGFR variability (CV): Q1 ($0.23 \leq CV < 6.86$), Q2 ($6.86 \leq CV < 10.25$), Q3 ($10.25 \leq CV < 16.09$), Q4 ($16.09 \leq CV \leq 155.51$).

Table S3. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (ARV)[*]

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 600897)	2804	1935338.00	1.44884	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 600629)	2902	1922524.52	1.50947	**1.087 (1.032-1.145)**	**1.088 (1.033-1.146)**	**1.077 (1.023-1.135)**
Q3 (n = 600337)	3157	1916602.99	1.64719	**1.195 (1.136-1.257)**	**1.190 (1.131-1.253)**	**1.169 (1.110-1.231)**
Q4 (n = 600805)	3118	1899440.08	1.64154	**1.261 (1.198-1.328)**	**1.272 (1.208-1.339)**	**1.226 (1.161-1.295)**
P for trend				<0.0001	<0.0001	<0.0001

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: ARV, average real variability; eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate, while the average real variability (ARV) was used to assess variability. [†]Range of eGFR variability (ARV): Q1 (0.08 ≤ ARV < 5.62), Q2 (5.62 ≤ ARV < 10.32), Q3 (10.32 ≤ ARV < 17.22), Q4 (17.22 ≤ ARV ≤ 281.27).

Table S4. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (VIM)[*], sensitivity analysis after excluding individuals with any malignancy

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 594213)	2183	1905371.59	1.14571	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 588823)	2803	1883503.79	1.48818	1.019 (0.962-1.079)	1.056 (0.997-1.118)	**1.076 (1.015-1.140)**
Q3 (n = 592493)	2807	1892573.47	1.48317	**1.114 (1.053-1.178)**	**1.103 (1.042-1.167)**	**1.104 (1.043-1.168)**
Q4 (n = 587924)	3753	1869279.11	2.00773	**1.311 (1.241-1.385)**	**1.257 (1.190-1.329)**	**1.240 (1.173-1.310)**
P for trend				<0.0001	<0.0001	<0.0001

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: VIM, variability independent of the mean; eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate, while the variability independent of the mean (VIM) was used to assess variability. [†]Range of eGFR variability (VIM): Q1 ($0.10 \leq$ VIM < 6.11), Q2 ($6.11 \leq$ VIM < 8.81), Q3 ($8.81 \leq$ VIM < 13.95), Q4 ($13.95 \leq$ VIM ≤ 542.29).

Table S5. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (VIM)[*], sensitivity analysis after excluding individuals who received major organ (kidney, liver, heart, or lung) transplantation

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 600718)	2248	1926027.22	1.16717	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 600350)	2915	1919765.06	1.51841	1.017 (0.961-1.076)	1.052 (0.994-1.113)	**1.072 (1.012-1.134)**
Q3 (n = 600853)	2893	1918869.75	1.50766	**1.108 (1.049-1.171)**	**1.097 (1.038-1.160)**	**1.098 (1.038-1.161)**
Q4 (n = 600485)	3919	1908443.43	2.05351	**1.310 (1.241-1.382)**	**1.256 (1.190-1.326)**	**1.239 (1.173-1.308)**
P for trend				<0.0001	<0.0001	<0.0001

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: VIM, variability independent of the mean; eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate, while the variability independent of the mean (VIM) was used to assess variability. [†]Range of eGFR variability (VIM): Q1 (0.10 ≤ VIM < 6.11), Q2 (6.11 ≤ VIM < 8.81), Q3 (8.81 ≤ VIM < 13.95), Q4 (13.95 ≤ VIM ≤ 542.29).

Table S6. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (VIM)[*], sensitivity analysis after excluding individuals with prescriptions for angiotensin converting enzyme inhibitors or aldosterone receptor blockers

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 562220)	1726	1803183.87	0.95720	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 543006)	1986	1737223.52	1.14320	0.994 (0.930-1.062)	1.021 (0.956-1.092)	1.054 (0.986-1.127)
Q3 (n = 549821)	2056	1756728.36	1.17036	**1.096 (1.028-1.169)**	**1.086 (1.019-1.159)**	**1.098 (1.029-1.171)**
Q4 (n = 529332)	2383	1684211.53	1.41491	**1.192 (1.118-1.271)**	**1.148 (1.076-1.225)**	**1.158 (1.086-1.236)**
P for trend				<0.0001	<0.0001	<0.0001

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: VIM, variability independent of the mean; eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate, while the variability independent of the mean (VIM) was used to assess variability. [†]Range of eGFR variability (VIM): Q1 ($0.10 \leq$ VIM < 6.11), Q2 ($6.11 \leq$ VIM < 8.81), Q3 ($8.81 \leq$ VIM < 13.95), Q4 ($13.95 \leq$ VIM ≤ 542.29).

Table S7. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (VIM)[*], sensitivity analysis after excluding individuals who have ever been on renal replacement therapy (hemodialysis, peritoneal dialysis, or kidney transplantation)

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 600589)	2247	1925612.44	1.16690	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 600222)	2915	1919367.81	1.51873	1.017 (0.961-1.076)	1.052 (0.994-1.113)	**1.073 (1.014-1.136)**
Q3 (n = 600705)	2892	1918387.49	1.50752	**1.109 (1.049-1.172)**	**1.097 (1.038-1.160)**	**1.099 (1.040-1.162)**
Q4 (n = 600171)	3900	1907503.43	2.04456	**1.304 (1.235-1.376)**	**1.250 (1.184-1.320)**	**1.235 (1.170-1.304)**
P for trend				<0.0001	<0.0001	<0.0001

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: VIM, variability independent of the mean; eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate, while the variability independent of the mean (VIM) was used to assess variability. [†]Range of eGFR variability (VIM): Q1 ($0.10 \leq VIM < 6.11$), Q2 ($6.11 \leq VIM < 8.81$), Q3 ($8.81 \leq VIM < 13.95$), Q4 ($13.95 \leq VIM \leq 542.29$).

Table S8. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (VIM)[*], sensitivity analysis after excluding individuals with glomerular diseases

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 593739)	2191	1903682.49	1.15093	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 590811)	2819	1889298.61	1.49209	1.015 (0.958-1.075)	1.050 (0.992-1.112)	**1.073 (1.013-1.137)**
Q3 (n = 592455)	2797	1892128.76	1.47823	**1.104 (1.044-1.168)**	**1.093 (1.033-1.156)**	**1.096 (1.036-1.160)**
Q4 (n = 588485)	3736	1870478.60	1.99735	**1.297 (1.228-1.370)**	**1.244 (1.177-1.315)**	**1.232 (1.165-1.302)**
P for trend				<0.0001	<0.0001	<0.0001

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: VIM, variability independent of the mean; eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate, while the variability independent of the mean was used to assess variability. [†]Range of eGFR variability (VIM): Q1 ($0.10 \leq$ VIM < 6.11), Q2 ($6.11 \leq$ VIM < 8.81), Q3 ($8.81 \leq$ VIM < 13.95), Q4 ($13.95 \leq$ VIM ≤ 542.29).

Table S9. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (VIM)[*], sensitivity analysis after excluding individuals with prescriptions for steroids

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 233326)	713	746697.88	0.95487	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 201346)	849	644949.67	1.31638	1.089 (0.983-1.206)	**1.114 (1.005-1.234)**	**1.149 (1.036-1.274)**
Q3 (n = 222615)	880	710861.87	1.23793	**1.134 (1.027-1.252)**	**1.114 (1.009-1.231)**	**1.121 (1.015-1.239)**
Q4 (n = 198696)	988	632709.83	1.56154	**1.294 (1.171-1.429)**	**1.229 (1.112-1.359)**	**1.225 (1.108-1.354)**
P for trend				<0.0001	<0.0001	0.0004

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: VIM, variability independent of the mean; eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate, while the variability independent of the mean was used to assess variability. [†]Range of eGFR variability (VIM): Q1 ($0.10 \leq$ VIM < 6.11), Q2 ($6.11 \leq$ VIM < 8.81), Q3 ($8.81 \leq$ VIM < 13.95), Q4 ($13.95 \leq$ VIM ≤ 542.29).

Table S10. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to quartiles of estimated glomerular filtration rate variability (VIM)[*], sensitivity analysis using the Chronic Kidney Disease Epidemiology Collaboration equation instead of the Modification of Diet in Renal Disease equation to calculate estimated glomerular filtration rate

eGFR variability quartiles[†]	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
Q1 (n = 600792)	2987	1920600.65	1.55524	1(Ref.)	1(Ref.)	1(Ref.)
Q2 (n = 600610)	3142	1927735.97	1.62989	1.027 (0.977-1.080)	1.006 (0.957-1.058)	1.013 (0.963-1.065)
Q3 (n = 600542)	3017	1916965.74	1.57384	**1.093 (1.039-1.149)**	**1.062 (1.009-1.117)**	**1.061 (1.008-1.116)**
Q4 (n = 600724)	2835	1908603.22	1.48538	**1.208 (1.147-1.273)**	**1.154 (1.095-1.215)**	**1.144 (1.086-1.205)**
P for trend				<0.0001	<0.0001	<0.0001

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: VIM, variability independent of the mean; eGFR, estimated glomerular filtration rate. [*]The Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation was used to calculate estimated glomerular filtration rate, while the variability independent of the mean was used to assess variability. [†]Range of eGFR variability (VIM): Q1 ($0.03 \leq$ VIM < 4.55), Q2 ($4.55 \leq$ VIM < 8.03), Q3 ($8.03 \leq$ VIM < 12.19), Q4 ($12.19 \leq$ VIM ≤ 75.95)

Table S11. Hazard ratios and 95% confidence intervals for the incidence of type 2 diabetes according to groups stratified by percent change in estimated glomerular filtration rate[*]

Percent change in eGFR	Events (n)	Follow-up duration (person-years)	Incidence rate (per 1000 person-years)	Model 1	Model 2	Model 3
<-5% (n = 1084108)	4944	3187380.29	1.5572	**1.084 (1.034-1.136)**	**1.052 (1.004-1.103)**	1.037 (0.989-1.087)
≥-5% but <5% (n = 539304)	2747	1840402.96	1.49261	1(Ref.)	1(Ref.)	1(Ref.)
≥5% (n = 779256)	4290	2646122.34	1.62124	**1.084 (1.033-1.137)**	**1.067 (1.017-1.120)**	**1.065 (1.015-1.117)**

Model 1: adjusted for age and sex. Model 2: adjusted for model 1 plus smoking history, alcohol consumption, regular exercise, low-income status, and body mass index. Model 3: adjusted for model 2 plus hypertension, dyslipidemia, and mean eGFR during the health examinations. Abbreviations: eGFR, estimated glomerular filtration rate. [*]The Modification of Diet in Renal Disease equation was used to calculate estimated glomerular filtration rate.