

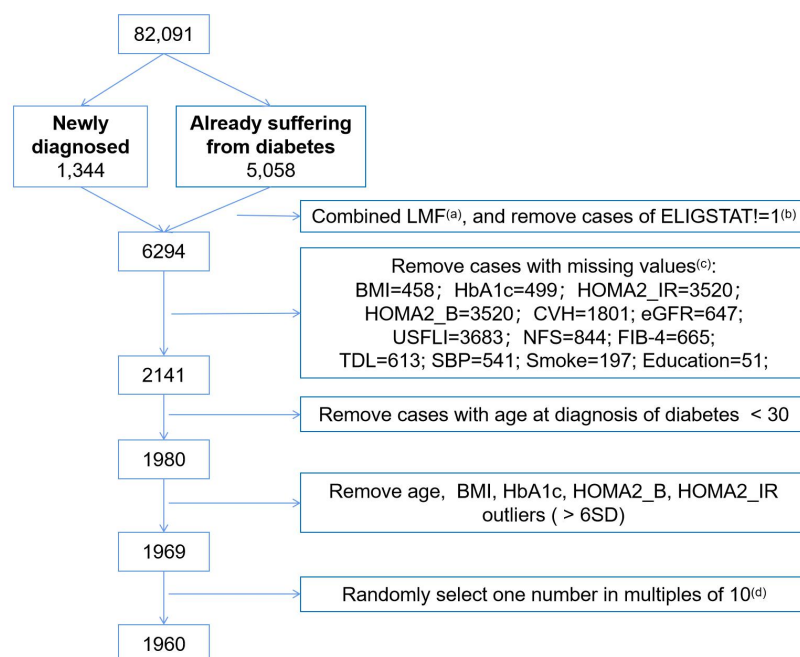
Supplementary material

Validation of Type 2 Diabetes Subgroups by Simple Clinical Parameters: A Retrospective Cohort Study of NHANES Data from 1999 to 2014

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Figure

Figure S1 Algorithm for participant selection in the NHANES (1999-2014)



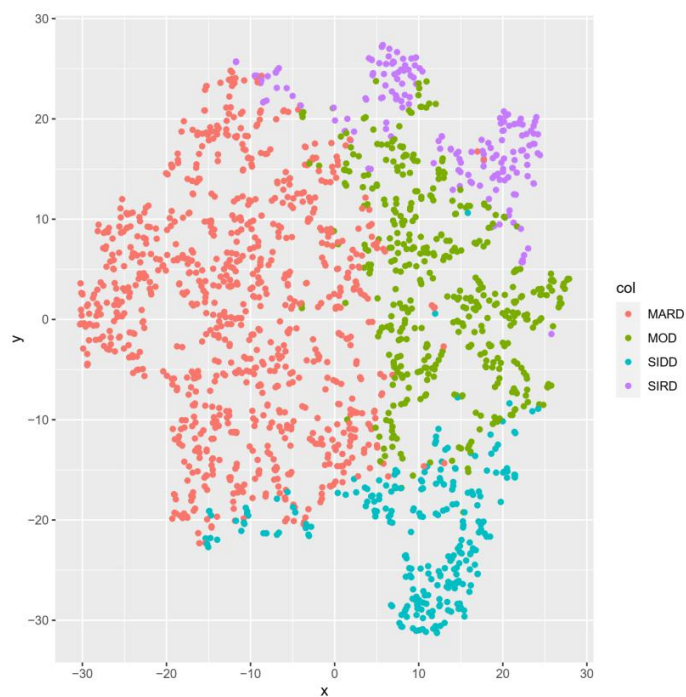
Note:

(a) LMF, Public-use Linked Mortality Files;

(b) ELIGSTAT, Eligibility Status for Mortality Follow-up, ELIGSTAT=1 (Eligible);

(c) CVH, cardiovascular health; eGFR, estimated glomerular filtration rate; USFLI, the united states fatty liver index; NFS, NAFLD fibrosis score; FIB-4, the fibrosis-4 score; TDL, total cholesterol; SBP, systolic pressure;

(d) Randomly select data using the createFolds () function in the caret R package.

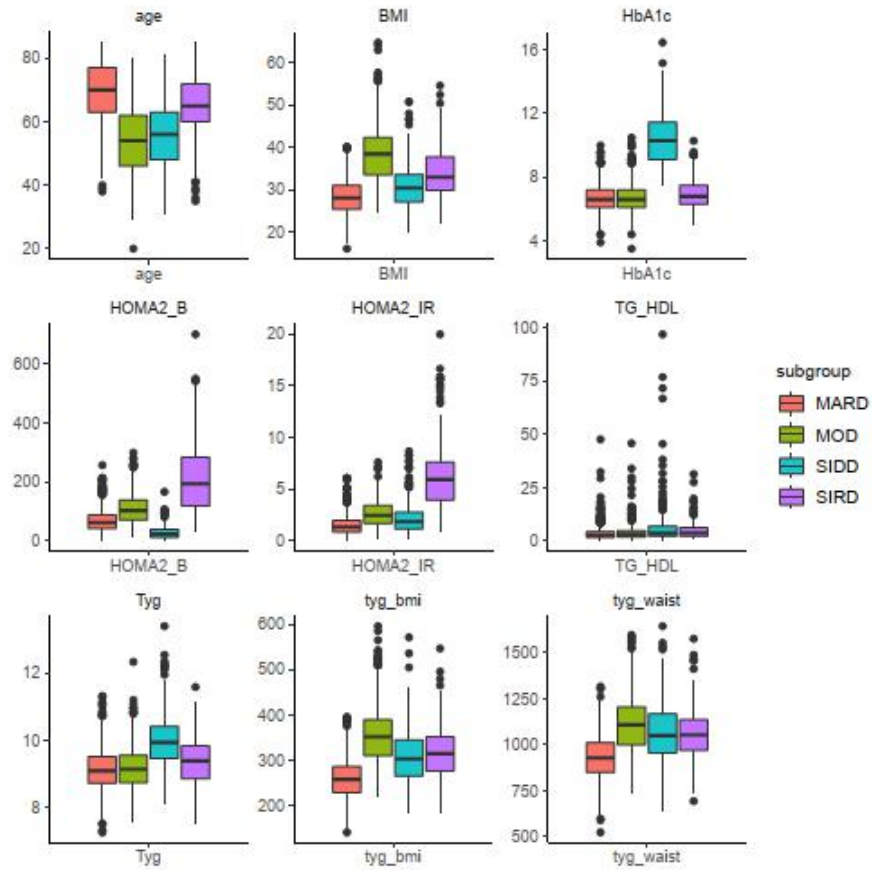
Figure S2 t-SNE visualization of four T2D subtypes in NHANES (1999-2014)

Note:

Each point represented one participant;

The x and y axes are two dimensions after dimensionality reduction.

MARD, mild age-related diabetes; MOD, mild obesity-related diabetes; SIDD, severe insulin-deficient diabetes; SIRD, severe insulin-resistant diabetes.

Figure S3 Distributions and characteristics of the four T2D subgroups

Note:

$TyG = \ln \left[\frac{\text{fasting triglyceride (mg dL-1)} \times \text{fasting glucose (mg dL-1)}}{2} \right]$

$TyG_BMI = TyG \times BMI \text{ (kg m-2)}$

$TyG_WC = TyG \times \text{waist (cm)}$

$TG_HDL = \text{triglyceride (mg dL-1)} / \text{high-density lipoprotein cholesterol (mg dL-1)}$

MARD, mild age-related diabetes; MOD, mild obesity-related diabetes; SIDD, severe insulin-deficient diabetes; SIRD, severe insulin-resistant diabetes.

Table

Table S1 The Silhouette Coefficient of different clustering algorithm

	k-means	k-means++	GMMs
Mean	0.26	0.26	0.17

Note:

GMMs, Gaussian Mixture Model.

Table S2 Classification performance of the 3-variable approach

	Total	Male	Female	Newly diagnosed	Already diagnosed
Accuracy (95%CI)	0.74 (0.72, 0.76)	0.72(0.69, 0.74)	0.73 (0.70, 0.76)	0.73 (0.68, 0.76)	0.77 (0.75, 0.79)
Kappa	0.62	0.59	0.61	0.60	0.66

Note:

Kappa statistic expressed an agreed measure used in nominal scales, which gave an idea about how much the observations differs from those expected

Table S3 Correlation coefficients between TyG, TyG-BMI, TyG-WC, TG/HDL-C and HOMA2-IR

		TyG	TyG_BMI	TyG_WC	TG_HDL
group with diabetes	HOMA2_IR	0.22	0.20	0.24	0.10
group without diabetes	HOMA2_IR	0.33	0.56	0.53	0.27

Note:

The correlation coefficients were calculated with the fasting subsample weights according to the NCHS recommendations.

$TyG = \text{Ln} [\text{fasting triglyceride (mg dL-1)} \times \text{fasting glucose (mg dL-1)} / 2]$

$TyG_BMI = TyG * BMI \text{ (kg m-2)}$

$TyG_WC = TyG * \text{waist (cm)}$

$TG_HDL = \text{triglyceride (mg dL-1)} / \text{high-density lipoprotein cholesterol (mg dL-1)}$