A Guide to Calculating and Interpreting the Kidney Donor Profile Index (KDPI)

Updated: April 21, 2025

What is the KDPI?

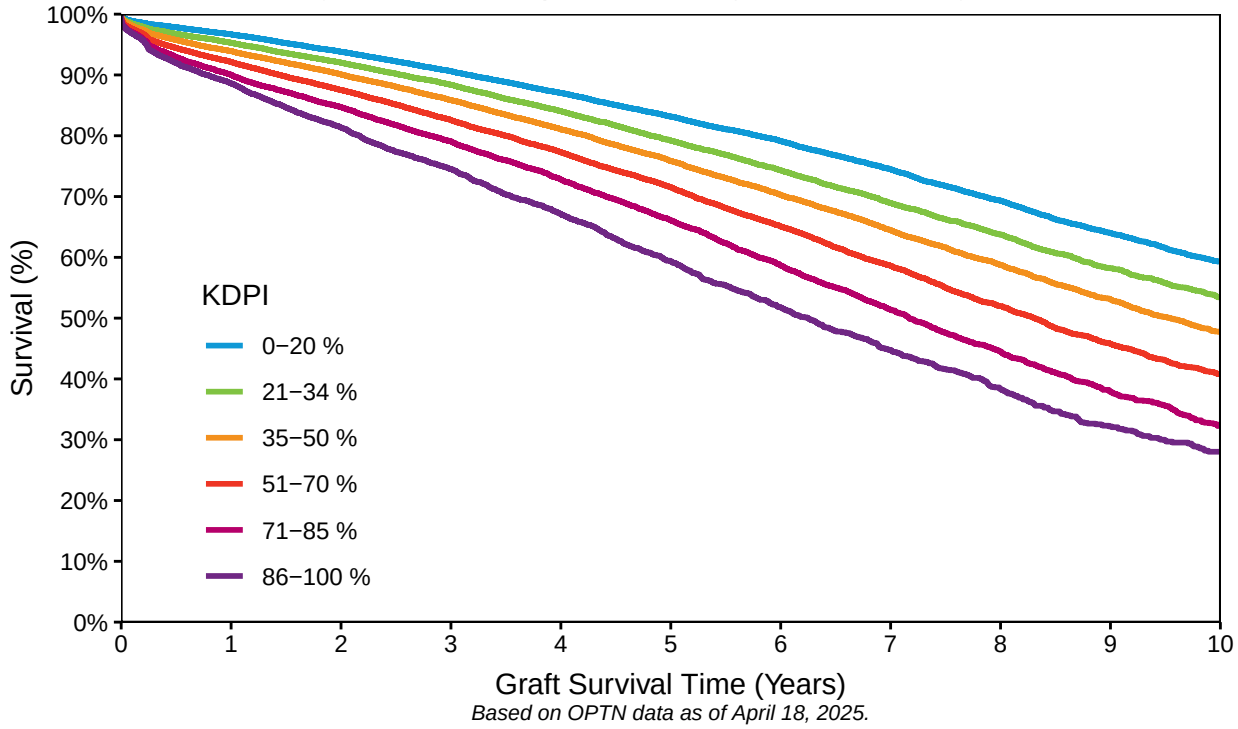
The Kidney Donor Profile Index (KDPI) is a numerical measure that combines eight donor factors, including clinical parameters and demographics, to summarize into a single number the quality of deceased donor kidneys relative to other recovered kidneys. The KDPI is derived by first calculating the Kidney Donor Risk Index (KDRI) for a deceased donor.

Kidneys from a donor with a KDPI of 90%, for example, have a KDRI (which indicates relative risk of graft failure) greater than 90% of recovered kidneys. The KDPI is simply a mapping of the KDRI from a relative risk scale to a cumulative percentage scale. The reference population used for this mapping is all deceased donors in the United States with a kidney recovered for the purpose of transplantation in the prior calendar year. Lower KDPI values are associated with increased donor quality and expected longevity.

What is the KDRI?

The Kidney Donor Risk Index (KDRI) is an estimate of the relative risk of post-transplant kidney graft failure (in an average, adult recipient) from a particular deceased donor compared to a reference donor. The reference donor chosen in the original KDRI publication[1] was age 40, non-diabetic, etc. The median (50^{th} percentile) donor was chosen as the reference donor to produce the scaled (or "normalized") version of KDRI displayed in the OPTN Donor Data and Matching System. A donor with a scaled KDRI of 1.28, for example, confers an estimated risk of kidney graft failure that is 1.28 times that of the median donor. Lower KDRI values are associated with increased donor quality and expected longevity.

Figure 1. Kaplan−Meier Graft Survival Estimates for Adult, Deceased Donor, Kidney−Alone Transplants During 2013−2023 by KDPI



Based on OPTN data as of April 18, 2025.

What are some intended uses of the KDPI?

The primary purpose of adding KDPI to the OPTN Donor Data and Matching System is for implementation of the "longevity matching" concept into the kidney allocation system. Candidates with longer estimated post-transplant longevity (EPTS score of 20% or less) receive priority for kidneys from donors with KDPI of 20% or less.

The KDPI also provides a measure of donor quality for assisting transplant professionals in evaluating the suitability of deceased donor kidney offers for each of their candidates. Just as some candidates are more likely to benefit from an ECD kidney than others[2], transplant clinicians may choose to accept high-KDPI kidneys, depending on the medical circumstances of each particular candidate and expected program-specific waiting times.[3]

KDPI may also be useful in determining whether to accept an offer of both kidneys from a particular donor or to decline if only a single kidney is available. For example, a program may be willing to consider accepting kidneys from a donor with an elevated KDPI, but only if both kidneys are available (per **OPTN Policy 8.5: Allocation of Both Kidneys from a Single Deceased Donor to a Single Candidate**) and would together provide sufficient renal mass for an anticipated successful outcome.[4]

Calculating and Interpreting the Kidney Donor Risk Index (KDRI)

The KDPI is derived from the Kidney Donor Risk Index (KDRI)[1]. Consequently, to determine a donor's KDPI, the first step is to calculate the donor's KDRI.

The KDRI displayed in the OPTN Donor Data and Matching System and referenced in this document is the *scaled, donor-only* version of the KDRI. As explained in Rao, et al[1], several factors pertaining to the recipient and/or transplant procedure (cold ischemic time, degree of HLA mismatching, single vs. double vs. en-bloc kidneys) can also be used to calculate a "full" KDRI.

Since these factors are generally not known at the time offers are made or are candidate-specific, the donor-only KDRI was implemented.

On October 31, 2024 the OPTN implemented *Refit Kidney Donor Profile Index without Race and Hepatitis C Virus*[5]. This refit formula removed race/ethnicity and HCV from the original KDPI formula from Rao, et al[1], thus using 8 instead of the original 10 factors to calculate KDPI. The updated formula is based on an SRTR report commissioned by the OPTN Minority Affairs Committee[6].

The following donor characteristics are used to calculate the KDRI:

- ✓ Age
- ✓ Height
- ✓ Weight
- ✓ History of Hypertension
- ✓ History of Diabetes
- ✓ Cause of Death
- ✓ Serum Creatinine
- ✓ Donation after Circulatory Death (DCD) Status

The association between these donor factors and graft survival was determined by an SRTR report commissioned by the OPTN Minority Affairs Committee[6], by estimating a multivariable Cox proportional hazards regression model using graft outcomes from a little over 50,000 adult, kidney alone, first-time deceased donor kidney recipients in the United States from 2018-2021. The estimation method followed Rao, et al[1] but removed the variables race and HCV status in the model. The estimated coefficients derived from this model are shown in **Table 1**.

Table 1. KDRI Donor Factors and Model Coefficients

Donor Characteristic	Applies to Which Donors	KDRI Coefficient (β)	KDRI $X\beta$ Component
Age (integer years)	All	0.0092	0.0092*(Age–40)
	Age < 18	0.0113	0.0113*(Age–18)
	Age > 50	0.0067	0.0067*(Age–50)
Height (cm)	All	-0.0557	-0.0557*(Hgt–170)/10
Weight (kg)	Weight < 80 kg	-0.0333	-0.0333*(Wgt–80)/5
History of Hypertension	Hypertensive	0.1106	0.1106
History of Diabetes	Diabetic	0.2577	0.2577
Cause of Death	Cause of Death: CVA	0.0743	0.0743

Table 1. KDRI Donor Factors and Model Coefficients

Donor Characteristic	Applies to Which Donors	KDRI Coefficient (β)	KDRI $X\beta$ Component
Serum Creatinine (mg/dL)	All	0.2128	0.2128*(Creat–1)
	Creatinine > 1.5	-0.2199	-0.2199*(Creat–1.5)
DCD Status	DCD	0.1966	0.1966

The KDRI is calculated for a particular donor by summing the $X\beta$ components for all applicable donor characteristics, then applying the antilog function (base e) to this sum as follows:

$$X\beta = \sum \text{KDRI score components}$$

$$\text{KDRI}_{\text{RAO}} = e^{X\beta}$$

KDRI_{RAO} is interpreted as the relative risk of post-transplant graft failure for this donor compared to a reference donor (age=40 years etc.) as defined in Rao, et al[1]. This particular reference donor is neither an "ideal" donor nor an "average" donor, but somewhere in between. Consequently, to aid in its interpretation, the version of the KDRI displayed in the OPTN Donor Data and Matching System is normalized (or "scaled") such that a value of 1.0 corresponds to the median donor as follows:

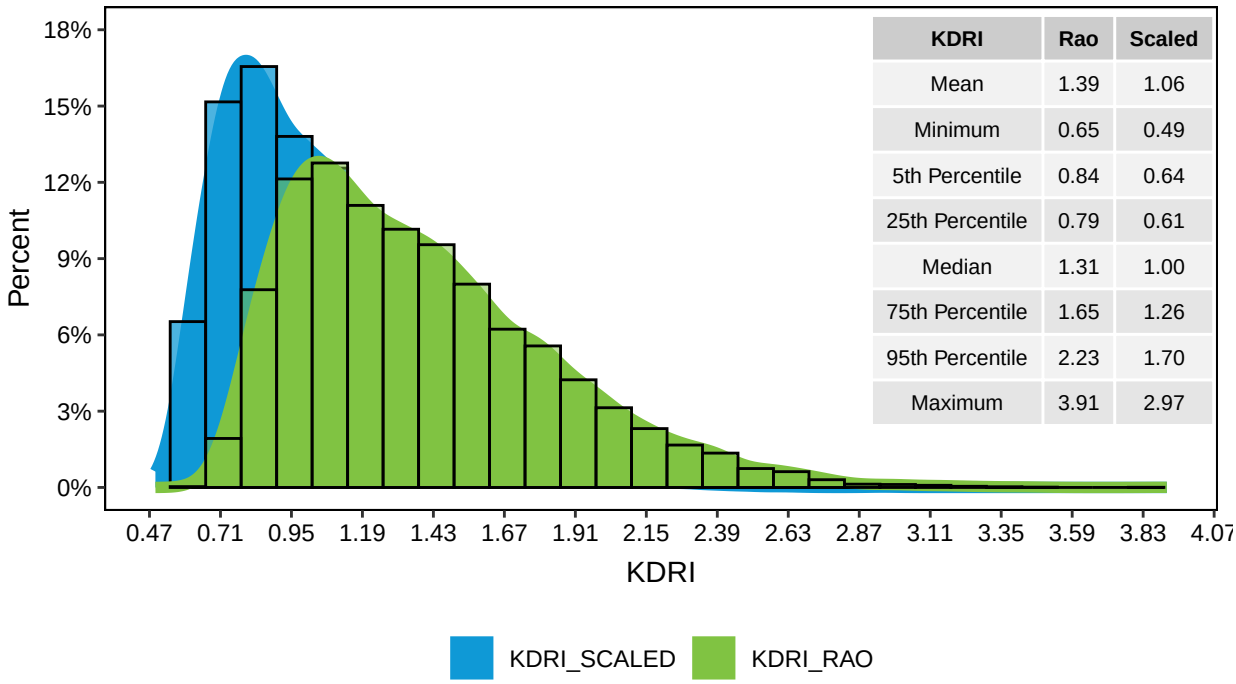
$$\text{KDRI}_{\text{SCALED}} = \frac{\text{KDRI}_{\text{RAO}}}{\text{scaling factor}}$$

The "scaling factor" is the median KDRI_{RAO} value among all kidney donors recovered during the previous calendar year. This value was 1.30900852563932 in 2023; the scaling factor currently in use can be found at the bottom of the KDRI-to-KDPI Mapping Table document located on the OPTN website.[7] The use of this scaling factor does not affect the KDPI or the donor's rank-ordering relative to other donors.

The $\text{KDRI}_{\text{SCALED}}$ is interpreted as the relative risk of post-transplant graft failure (in an average, adult recipient) for this donor compared to the median kidney donor recovered last year. For example a donor with KDPI=74% and $\text{KDRI}_{\text{SCALED}}$ = 1.62, "The estimated risk of kidney graft failure from this donor is higher than 74% of all kidney donors recovered in 2023 and 1.62 times that of the median donor from 2023". The value of 1.62 is the scaled KDRI.

As shown in **Figure 2**, in 2023 KDRI_{RAO} ranged from 0.65 to 3.91, and $\text{KDRI}_{\text{SCALED}}$ ranged from 0.49 to 2.97.

Figure 2. Distribution of Kidney Donors Recovered in the U.S. in 2023, by KDRI



KDRI	Rao	Scaled
Mean	1.39	1.06
Minimum	0.65	0.49
5th Percentile	0.84	0.64
25th Percentile	0.79	0.61
Median	1.31	1.00
75th Percentile	1.65	1.26
95th Percentile	2.23	1.70
Maximum	3.91	2.97

Based on OPTN data as of April 18, 2025.

Calculating and Interpreting the Kidney Donor Profile Index (KDPI)

The KDPI is simply a mapping of the KDRI, a measure of relative risk, to a cumulative percentage scale. The KDPI is calculated to the nearest integer percentage value and ranges from 0% to 100%. A donor with KDPI of 0% has a KDRI that is smaller than all donors in the reference population. In general, a donor with a KDPI of $X\%$ implies that the donor's KDRI exceeds more than $(X-1)\%$, but not more than $X\%$, of all donors in the reference population. For example:

- A donor with a KDPI of 20% has a KDRI exceeding at least 19% and at most 20% of all donors in the reference population.
- A donor with a KDPI of 99% has a KDRI exceeding at least 98% and at most 99% of all donors in the reference population.
- A donor with a KDPI of 100% has a KDRI exceeding more than 99% of all donors in the reference population, including donors with KDRI exceeding the maximum observed value in the reference population.

The KDRI-to-KDPI Mapping Table, located on the OPTN website, shows the KDPI associated with every possible $\text{KDRI}_{\text{SCALED}}$ value.[7]

Example Calculation: KDRI and KDPI

Calculate the KDRI and KDPI for a donor with the following characteristics:

- Age: 52 years
- Height: 183 cm
- Weight: 81 kg
- History of Hypertension: Yes, donor has history of hypertension
- Diabetes Status: No, donor has no history of diabetes
- Cause of Death (COD): Cerebrovascular accident (CVA)
- Serum Creatinine: 1.7 mg/dL
- DCD Status: Yes, donor was recovered as a DCD

Recall the formula for calculating $X\beta$ from page 3:

$$\begin{aligned} X\beta =& 0.0092 \times (\text{age} - 40) + 0.0113 \times (\text{age} - 18) \times \mathbb{I}(age < 18) + 0.0067 \times (\text{age} - 50) \times \mathbb{I}(age > 50) \\ & - 0.0557 \times \left(\frac{\text{height} - 170}{10}\right) - 0.0333 \times \left(\frac{\text{weight} - 80}{5}\right) \times \mathbb{I}(weight < 80\ kg) \\ & + 0.1106 \times \mathbb{I}(\textit{History of hypertension}) + 0.2577 \times \mathbb{I}(\textit{History of diabetes}) \\ & + 0.0743 \times \mathbb{I}(COD = CVA) + 0.2128 \times (Creatinine - 1) \\ & - 0.2199 \times (Creatinine - 1.5) \times \mathbb{I}(Creatinine > 1.5\ mg/dL) + 0.1966 \times \mathbb{I}(DCD) \end{aligned}$$

First, calculate and take the sum of each $X\beta$ component:

$$\begin{aligned} X\beta = & \left[0.0092 \times (52 - 40) + 0.0113 \times (52 - 18) \times 0 + 0.0067 \times (52 - 50) \times 1\right] \\ & - \left[0.0557 \times \frac{183 - 170}{10}\right] - \left[0.0333 \times \frac{81 - 80}{5} \times 0\right] \\ & + \left[0.1106 \times 1\right] + \left[0.2577 \times 0\right] \\ & + \left[0.0743 \times 1\right] + \left[0.2128 \times (1.7 - 1) - 0.2199 \times (1.7 - 1.5) \times 1\right] \\ & + \left[0.1966 \times 1\right] \\ = & \ 0.53787000000000 \end{aligned}$$

Next, exponentiate, as follows:

$$KDRI_{RAO} = e^{x\beta} = e^{0.53787000000000} = 1.71235565748184$$

Next, divide this donor's KDRI_{RAO} by the median KDRI_{RAO} in 2023 (or most recent cohort):

$$KDRI_{SCALED} = \frac{1.71235565748184}{1.30900852563932} = 1.3081317836685$$

Next, find the KDPI corresponding to a $KDRI_{SCALED}$ of 1.3081317836685 on the KDRI-to-KDPI Mapping Table from 2023 (or most recent cohort):

KDPI = 79%

Interpretation: The estimated risk of kidney graft failure from this donor is higher than 79% of kidney donors recovered in 2023 and 1.31 times that of the median donor recovered in 2023.

Frequently Asked Questions (FAQ) about KDPI

How strong is the association between KDRI/KDPI and graft survival?

Figure 1 shows that as KDPI increases, the expected graft survival decreases substantially, on average, based on the population of primary, adult, deceased donor, kidney alone transplants from 2013-2023. This analysis was not adjusted for recipient factors.

The predictive power of the KDPI can be summarized into a single number, the c-statistic, which is approximately 0.60.[1] The c-statistic ranges from 0.5 to 1.0, with higher values indicating greater discriminatory power (the ability to separate more successful from less successful graft outcomes along the KDPI scale). A c-statistic of 0.60 is considered to be only moderately predictive, whereas values near 0.70 or 0.80+ are more desirable and indicative of models with high discriminatory power.

Graft outcome is affected not only by donor characteristics, but also by recipient variables, factors related to the transplant procedure, as well as by the transplant program itself. KDPI is designed only to capture the donor factors that are predictive of graft outcome. Transplant outcomes are also affected by other factors not included in the KDPI, such as recipient age, diagnosis, and transplant program performance.

Prior to the removal of the donor race and HCV variables in the calculation of KDPI in October 2024, the strength of the association between KDPI and graft survival changed very little when adjusting for recipient factors in a multivariable model (though this relationship has not yet been reassessed in the context of the current KDRI fit without donor race and HCV variables). However, the goal of the KDRI is strictly to summarize graft failure risk based on differential characteristics of a deceased donor, not to explain all sources of variation in kidney transplant outcomes.

The KDPI has effectively the same predictive power as the KDRI, with only a trivial difference induced by the use of the discrete (one percentage point intervals) mapping table.

Survival rate estimates in **Table 2** are based on a Cox regression model with log(KDRI) as the sole independent variable, which allowed estimation of survival at desired values of KDPI, and graft failure defined as loss of graft or patient death. These survival rates are for single kidney alone transplants; survival rates are generally higher for en-bloc or double kidney transplants. These rates were not adjusted for recipient characteristics, but instead reflect the expected survival averaged across the broad spectrum of adult recipients.

How much predictive power is lost when using the donor-only version of the KDRI compared to the "full" KDRI that contains recipient-donor matching and transplant factors?

Prior to the removal of the donor race and HCV variables in the calculation of KDPI, evidence shows that virtually no predictive ability is lost by using a donor-only version of the KDRI ($c = 0.596$) compared to a full version of the KDRI ($c = 0.601$) that includes the degree of HLA matching, cold ischemic time, and transplant procedure type (single vs. double vs. en-bloc)[8]. However, survival rates tend to be substantially higher for en bloc transplants compared to single kidney transplants, all else equal. Additionally, dual kidney transplants confer longer expected survival, especially for high KDPI kidneys[4].

Note that these conclusions have not been reassessed in the context of the updated KDRI fit without donor race and HCV variables that was implemented in Oct 2024.

What other donor factors were considered for possible inclusion in the KDRI/KDPI?

Donor factors evaluated but not explicitly included in the KDRI formula included gender and cigarette use[1]. Since these two characteristics were included in the multivariable modeling process, but were not statistically significant after accounting for the other factors in the model, donor gender and cigarette use can be thought of as being implicitly included in the KDRI with a model coefficient of zero.

Table 2. Estimated Kidney Graft Survival Rates for Single Kidney Transplants in the U.S. in 2013-2023, by KDPI

KDPI	$KDRI_{RAO}$*	$KDRI_{SCALED}$*	Estimated Single Kidney Graft Survival Rates					
			1 Year	2 Years	3 Years	5 Years	8 Years	10 Years
1%	0.75	0.57	97.5%	95.7%	93.4%	86.5%	75.3%	68.8%
5%	0.84	0.64	97.5%	94.8%	91.6%	83.1%	69.0%	59.9%
10%	0.90	0.69	96.7%	94.0%	91.4%	83.8%	70.2%	62.6%
20%	1.00	0.77	95.4%	91.6%	87.6%	80.7%	63.2%	53.7%
30%	1.09	0.84	95.4%	92.3%	88.5%	78.8%	60.1%	47.7%
40%	1.21	0.91	93.9%	90.3%	86.0%	77.5%	59.3%	49.6%
50%	1.33	1.00	92.7%	88.8%	85.2%	75.8%	59.0%	46.5%
60%	1.48	1.11	92.2%	87.0%	82.4%	70.5%	52.3%	44.3%
70%	1.64	1.23	89.9%	85.7%	80.6%	69.8%	47.7%	39.5%
80%	1.83	1.37	87.9%	82.2%	75.7%	64.2%	43.4%	41.1%
90%	2.05	1.60	89.5%	81.4%	75.5%	59.3%	41.6%	28.3%
95%	2.39	1.84	85.6%	77.7%	72.2%	55.8%	42.3%	21.7%
99%	2.91	2.20	83.9%	76.4%	66.9%	50.6%	40.5%	20.8%

* Maximum of the range of KDRI rounded to 2 decimal places.

Donor reference population: All deceased kidney donors recovered for transplant in 2023.

Based on OPTN data including primary, adult, deceased donor, kidney alone transplants, as of April 18, 2025.

Is it okay to use the KDRI/KDPI as a measure of donor quality for non-renal organs?

The KDRI and KDPI were developed strictly in the context of predicting kidney graft survival. A Liver Donor Risk Index (LDRI)[9] has been developed to summarize the quality of liver donors; similarly, a Pancreas Donor Risk Index (PDRI)[10] exists for pancreas donors. Ideally, these organ-specific metrics should be used to aid in organ-specific decision-making.

However, prior to the removal of the donor race and HCV variables in the calculation of KDPI, evidence shows that the KDRI is highly correlated with both the LDRI and PDRI, and provides nearly identical discriminatory power (as measured by the c-statistic) as those organ-specific models. The KDRI was also shown to have only very modest discriminatory power ($c = 0.54$) for heart transplant outcomes and very little association with lung transplant outcomes ($c = 0.52$)[10].

Based on the evidence from the previous version of KDPI, though ideally the organ-specific indices should be used, it is not unreasonable to use the KDPI as an approximate measure of donor quality for livers and pancreata, and possibly even hearts.

Note that these conclusions have not been reassessed in the context of the updated KDRI fit without donor race and HCV variables.

What are the benefits of the KDPI?

KDPI is an improvement over the Expanded Criteria (ECD)/Standard Criteria Donor (SCD) dichotomy in several ways:

- KDPI incorporates 8 donor factors (instead of 4 as in the ECD definition) and is a more predictive measure of donor quality
- KDPI is a continuous "score" instead of a binary (yes/no) indicator
- KDPI illuminates the fact that not all ECDs are alike:
  - Some ECD kidneys have reasonably good estimated quality
  - Some SCD kidneys actually have lower estimated quality than some ECDs

How should KDPI *not* be used?

The KDPI should not be turned into a dichotomous indicator such that all kidneys with a KDPI $\leq X\%$ are considered equally "good" and those with KDPI $> X\%$ are equally "bad". Doing so would negate one of the advantages this continuous-scale metric has over the ECD indicator.

Also, factors already included in the KDPI formula, for example, history of hypertension, should generally not be used to differentiate the quality (in terms of expected graft survival) of kidney donors with the same KDPI. As an illustration, if two donors have a KDPI of 40%, but one has a history of hypertension and the other does not, the donor with the history of hypertension should not be considered to have a significantly lower expected graft survival, since the multivariable KDRI model has already taken hypertension into account. Other clinical reasons may make a hypertensive (or diabetic, DCD, etc.) donor less preferable compared to a non-hypertensive donor, however.

Finally, though a transplant program may choose to "rule out" all kidneys with KDPI exceeding a certain threshold (either for all of their candidates or by using candidate-specific thresholds), the KDPI should never be used in isolation to "rule-in" a kidney for transplantation. The KDPI may be clinically useful, but it has limitations, as described below.

What are the limitations of the KDPI?

As previously mentioned, the predictive power of the KDPI is only moderate ($c = 0.60$). It is not a precise enough tool to differentiate with high confidence the quality of kidney donors with only slight differences in KDPI. Donors on opposite ends of the KDPI spectrum can be differentiated in terms of expected graft outcomes with greater confidence.

In addition, the KDPI does not include *all* donor factors potentially associated with kidney graft outcomes. For example, biopsy results are not included in the KDPI, in large part because many deceased donor kidneys are not biopsied. Since the KDPI is a donor-level measure, not specific to either kidney, it also does not contain any information about anatomical damage, trauma, or abnormalities that may be associated with one of a donor's kidneys.

Further, the KDPI provides no assessment of the likelihood of disease or malignancy transmission from a deceased donor. The KDPI formula does not include infectious disease test results. Also not included is whether the donor has risk factors for blood-borne disease transmission as defined by the U.S. Public Health Service. The donor's social history, which may reflect a higher risk of disease transmission, is also absent from the KDPI.

Finally, the KDPI was developed using graft outcomes from strictly *adult* transplant recipients; pediatric recipients were not included in the modeling process. Consequently, KDPI should be used with caution when assessing donor quality from the perspective of a pediatric candidate.

The KDPI should be used in conjunction with these additional sources of information to make fully informed decisions about the suitability of a kidney for a particular transplant candidate.

Does the KDRI quantify the risk of kidney graft failure within a particular time window (e.g., first 6 months after transplant)?

No. The KDRI is a relative risk measure indicating an upward or downward shift in the risk of graft failure over time (the hazard function) for this donor relative to the reference donor. Thus, the KDRI does not have an interpretation limited to any particular outcome window, such as graft survival within 3 months, 6 months, 1 year, etc.

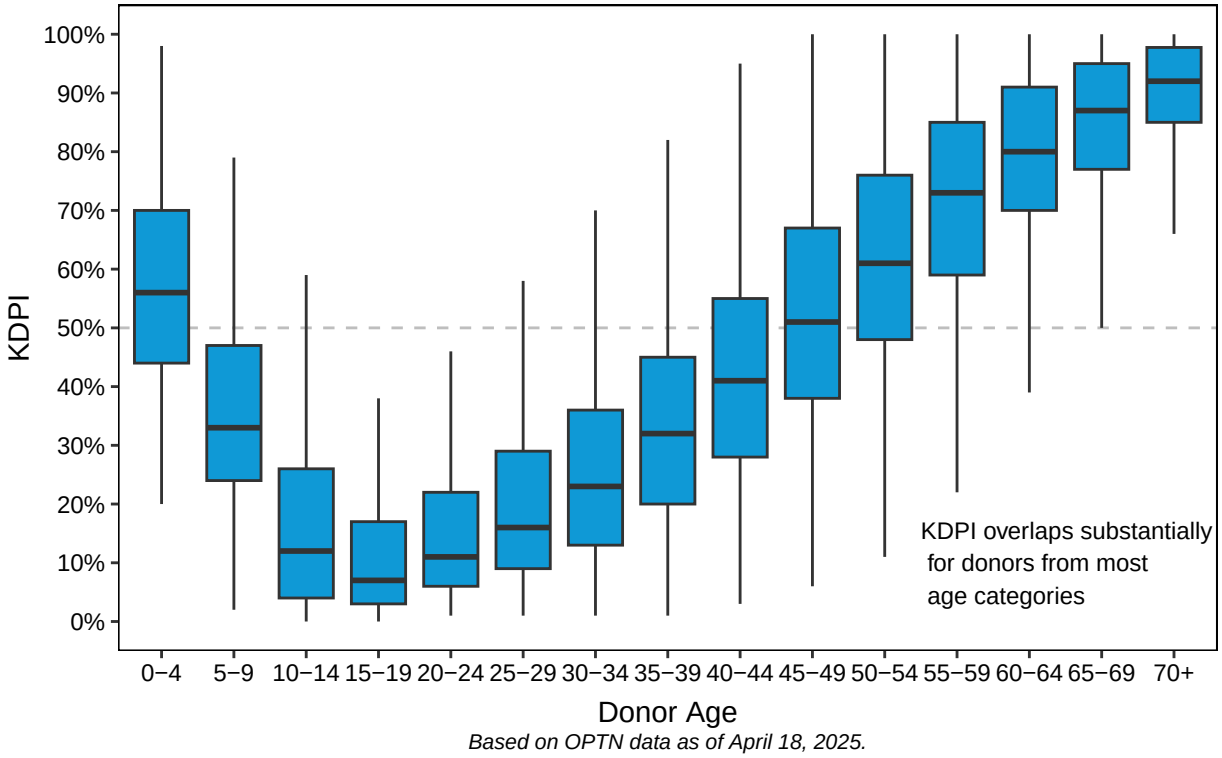
Can the KDPI be calculated for living donors?

No. The KDPI only applies to deceased donors. However, researchers have recently developed a living donor version of the KDPI that may prove useful.[11]

Is the KDPI applicable to pediatric donors?

Yes. Pediatric donors were included in the original KDRI analysis[1]. As shown in **Figure 3**, very young and/or small donors, whose kidneys are generally smaller and have less renal mass, typically have high KDPI values.

Figure 3. Relationship between Donor Age and KDPI
for Deceased Kidneys Donors Recovered in the U.S. from 2021−2023



Based on OPTN data as of April 18, 2025.

How are missing, unknown, and other "ambiguous" values handled in the KDPI calculation?

If any of the 8 fields used for calculating KDRI are missing, the KDRI and KDPI are not computed. However, certain fields can be "non-missing" but still be ambiguous:

- History of hypertension: unknown
- History of diabetes: unknown

All 8 fields used for calculating KDRI are required to run a kidney match. To ensure that when matches are run every donor has a non-missing KDPI value, ambiguous values are handled as follows:

If 'History of hypertension = unknown' was selected, the KDRI calculation in the OPTN Donor Data and Matching System assumes that the donor has a probability of having been hypertensive equal to the proportion of donors in the reference population having a history of hypertension. In 2023, this proportion was 38.12%. In such cases, the $X\beta$ component associated with a history of hypertension is the weighted average of 0 and 0.1106, or $0 \times (1 - 0.38116475987331) + 0.1106 \times (0.38116475987331) = 0.0422$.

If 'History of diabetes = unknown' was selected, the KDRI calculation in the OPTN Donor Data and Matching System assumes that the donor has a probability of having been diabetic equal to the proportion of donors in the reference population having a history of diabetes. In 2023, this proportion was 14.91%. In such cases, the $X\beta$ component associated with a history of diabetes is the weighted average of 0 and 0.2577, or $0 \times (1 - 0.14911770409153) + 0.2577 \times (0.14911770409153) = 0.0384$.

How are extreme values of creatinine, age, height, and weight handled in the KDPI calculation?

With the implementation of KDPI into the OPTN Donor Data and Matching System, this application no longer allows creatinine values to be entered that are outside of the range 0.01 to 40. Values that are between 10 and 40 may be correct but are questionable, and the system will prompt the user to double check the value to make sure it is correct before proceeding.

Values greater than 8 are capped at 8 for calculating KDRI; in other words, creatinine values of 8, 9, 15, and 25 would all result in the same KDRI/KDPI, all else being equal. A note will appear under the KDPI calculation indicating the creatinine was capped at 8 for KDRI/KDPI calculations.

Donor age is restricted to be between 0 and 99 in the OPTN Donor Data and Matching System. Height is limited to a maximum of 7'11" (241.3 cm), and the weight must be between 1 lb (0.454 kg) and 650 lb (294 kg).

Does the duration for which a donor had hypertension or diabetes affect the KDPI calculation?

No. The KDPI is only affected by the presence or absence of hypertension or diabetes in the donor.

Which KDRI and KDPI should be used for research studies: the version used in the OPTN Donor Data and Matching System, as described in this document, or a version of KDRI and KDPI based on data contained in the OPTN Deceased Donor Registration (DDR) form?

Most commonly, research on historical donors involving KDRI/KDPI relies upon data entered on the DDR, which may differ from data entered into the OPTN Donor Data and Matching System during organ placement. For example, the donor's history of hypertension or diabetes may have been unknown at the time of allocation, but has been provided on the DDR. Or, the most recent serum creatinine entered into the OPTN Donor Data and Matching System may not have been the final, or terminal, creatinine value provided on the DDR. For these reasons, the KDRI/KDPI used for historical research is typically based on DDR data, which is often more complete and updated than the OPTN Donor Data and Matching System data used to calculate KDRI/KDPI during allocation.

However, for research in which it is important to use the KDRI/KDPI that determined how the kidneys were allocated and potentially used in organ offer acceptance decisions, the OPTN Donor Data and Matching System-based version may be most appropriate. It must be kept in mind that the KDRI/KDPI displayed in the OPTN Donor Data and Matching System typically changes several times for the same donor, for example when data such as serum creatinine are updated, and it may be necessary to analyze serial KDRI/KDPI values.

The DDR-based KDRI/KDPI is provided in Standard Transplant Analysis and Research (STAR) files provided to researchers. If one of the 8 donor fields are missing on the DDR, the missing DDR-based KDRI/KDPI is imputed with the most recent KDPI/KDRI value from the OPTN Donor Data and Matching System (if not missing, calculated as described above).

When performing a retrospective analysis of donors for publication, which should I use: Scaled KDRI (normalized relative to the median donor), Original KDRI (per Rao), or KDPI?

The normalized version of KDRI that is displayed in the OPTN Donor Data and Matching System is expressed relative to the median donor recovered last year to improve interpretation and aid in real-time, organ-offer decision-making. However, it is not necessary to use the normalized version of KDRI for published research. The original KDRI, either including or excluding non-donor factors, can still be used. KDPI may also be an informative way to express relative donor quality in published research. Whichever approach is used, the publication should clearly articulate:

(a) whether or not the KDRI included non-donor factors,

(b) what reference donor was used for KDRI, and

(c) which reference population was chosen for mapping KDRI to KDPI (if applicable).

NOTE:

In Oct 2024, this guide was modified to describe the updated, refitted KDPI without race and HCV status. You can read more about this update here: https://https://optn.transplant.hrsa.gov/media/0zamk0dr/mac_kdpi_board-briefing-paper.pdf/. This update changed the calculation of KDPI scores, using a refitted formula that removed race/ethnicity and HCV from the formula, thus using 8 instead of original 10 factors to calculate KDPI.

References

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