



# Deviating From The Match Run To Save A Kidney

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## Introduction

On March 15, 2021, kidney allocation policy transitioned to using 250-nautical-mile circles (KAS250) in place of the donation service area. Because the circles are larger than most donation service areas, KAS250 increased access to kidney transplants; however, it did so at the cost of making allocation more logistically complex. As a consequence, it takes longer for an organ procurement organization (OPO) to progress through the match run to place a kidney.

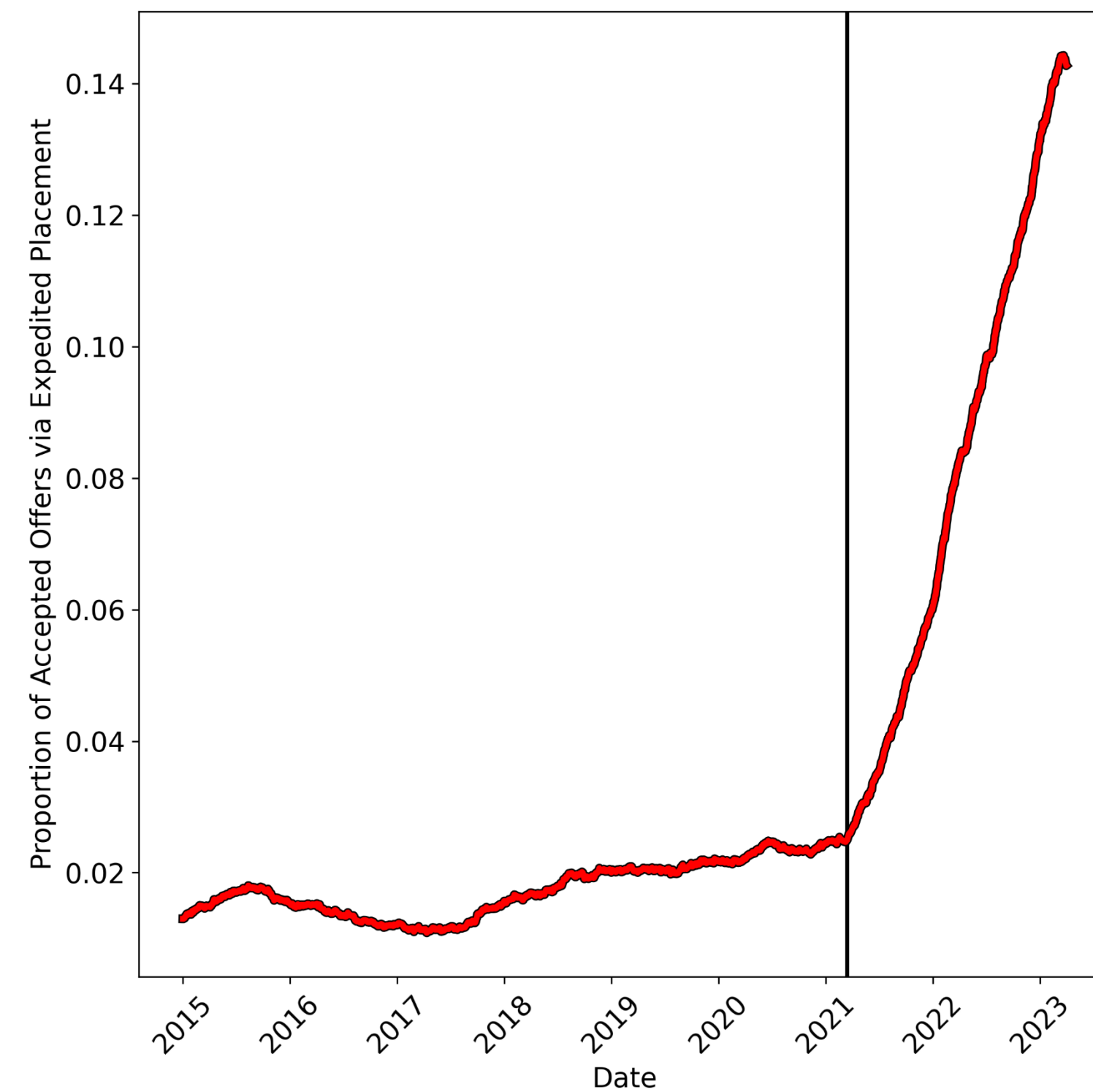
OPOs can deviate from the match run if doing so is necessary to save a deceased donor kidney from nonuse. However, determining appropriate criteria for this practice is nontrivial. An otherwise transplantable kidney may become at risk of nonuse if delays in allocation cause the kidney to accrue too much cold ischemia time (CIT) prior to being placed.

In this work, we first show that the practice of deviating from the match run has increased tremendously since the implementation of KAS250. We then calculate the kidney nonuse rate as a function of CIT at the point of offer notification, to aid OPOs in determining when to deviate from the match run to save a kidney.

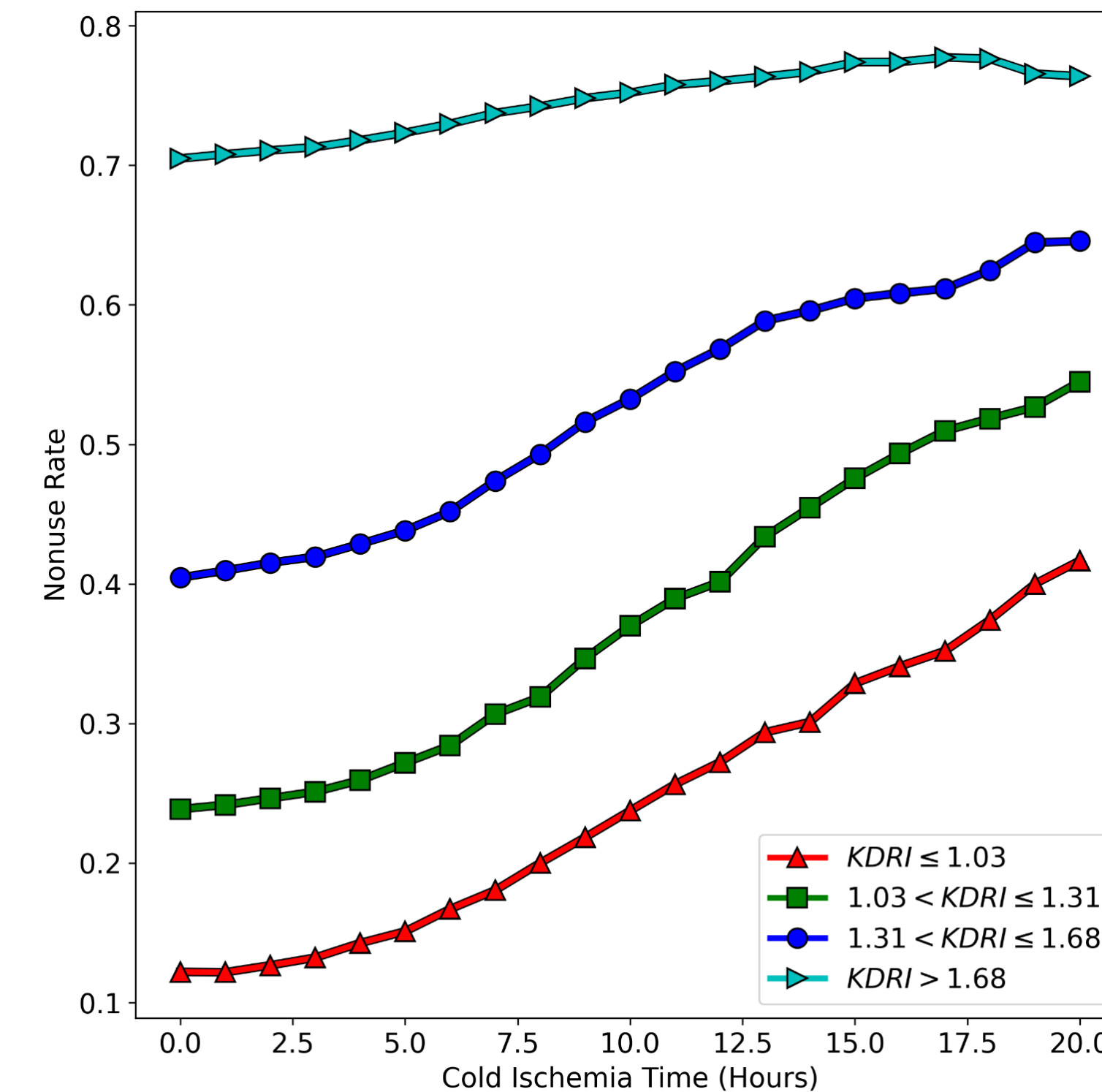
## Methods

Using match run data, we determined the proportion of accepted kidney offers that occurred via expedited placement over time. A match run was identified as having undergone expedited placement if there is any bypassed offer on that match run with refusal code 863. An accepted kidney offer was identified as having occurred via expedited placement if it was on a match run that underwent expedited placement.

Using Scientific Registry of Transplant Recipient data, we determined the CIT when the last offer notification was made for each kidney recovered for transplant from 03/15/2021 through 03/14/2022. For each CIT from 0 – 20 hours, we calculated the nonuse rate of kidneys for which the last offer notification occurred after accumulating that much CIT (ie, a time-updating probability of eventual kidney nonuse). Analysis was stratified by kidney donor risk index (KDRI) quartile.



**Figure 1.** On each day, the proportion of accepted offers in the previous year that occurred via expedited placement is determined. The black line indicates when circular kidney allocation was implemented.



**Figure 2.** Nonuse rate of kidneys as a function of cold ischemia time, stratified by kidney donor risk index (KDRI).

## Results

The proportion of accepted kidney offers that occurred via expedited placement was steady at around 2% prior to when the KAS250 allocation system was implemented. Since KAS250 was implemented it has rapidly increased, where now nearly 15% of accepted kidney offers occur via expedited placement (Figure 1).

Of all the kidneys recovered for transplant, 49% were still being offered by recovery. This ranged from 23% for the lowest-KDRI kidneys (KDRI <= 1.03) to 77% for the highest-KDRI kidneys (KDRI > 1.68). For all KDRI quartiles, nonuse rate increased as CIT accrued to 20 hours, however the strength of the relationship decreased as KDRI increased (Figure 2). The nonuse rate was always above 70% for the highest-KDRI kidneys (KDRI > 1.68).

## Conclusions

Since the implementation of KAS250, the proportion of accepted kidney offers that have occurred via expedited placement has substantially increased. However, there are no clear criteria for when it is appropriate for an OPO to deviate from the match run in this way. We have shown that kidneys are at an increased risk of nonuse as CIT accrues during allocation. For the highest-KDRI kidneys, OPOs may be justified in deviating from the match run if a kidney has not been placed as soon as recovery. For lower-KDRI kidneys, OPOs would likely need to wait some amount of time postrecovery before deviation. These data can inform the decision to deviate from a match run to increase utilization of deceased donor kidneys.