



deceased organ donation

Organ donation rates, number of organs recovered, number of organs transplanted, and number discarded per donor varied substantially across different regions of the country. Among donor service areas (DSAs), the lowest organ donation rate in 2009 was 51 per 100 eligible deaths, and the highest was 91 (Figure 1.2). Similarly, the number of organs recovered per donor varied widely across DSAs (Figures 2.2 and 2.3). In 2009, the mean number of organs transplanted per donor was 3.0; however, wide variation was seen (Figures 3.2 and 3.3). The discard rate for standard criteria donor (SCD) organs also varied (Figure 4.3), as did the use of expanded criteria donors (ECD) (Figure 5.1) and donation after circulatory death (DCD) (Figure 6.1). The waiting time for transplants also varied by DSA in 2009 (Figure 7.1).

Over the past 12 years, more organs were recovered per donor from SCDs than from ECDs or DCDs (Figure 2.4). In 2009, 4.0 organs per donor were recovered from SCDs, compared with 2.7 from ECDs and 2.6 from DCDs. However, the number of kidneys recovered per donor from DCDs was higher than or similar to the number of organs recovered from SCDs. For example, in 2009, 1.9 kidneys were recovered per donor from DCDs (Figure 2.5), more than the 1.8 and 1.6 kidneys recovered per donor from SCDs and ECDs, respectively. This trend of more organs recovered per donor from DCDs than from SCDs or ECDs was seen only for kidneys, which are arguably more resistant than other organs to potential long-term effects of ischemia (Figure 2.6). In 2009, 0.84 livers were transplanted per donor from SCDs, slightly more than the 0.73 livers transplanted per donor from ECDs (Figure 3.6).

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organs recovered per donor 127

organs transplanted per donor 129

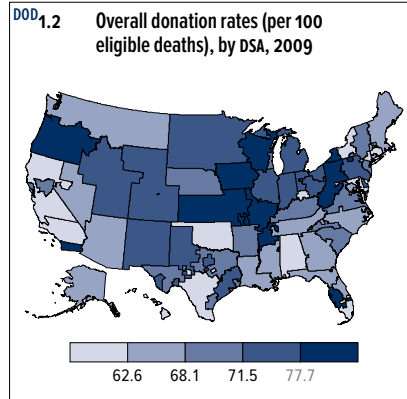
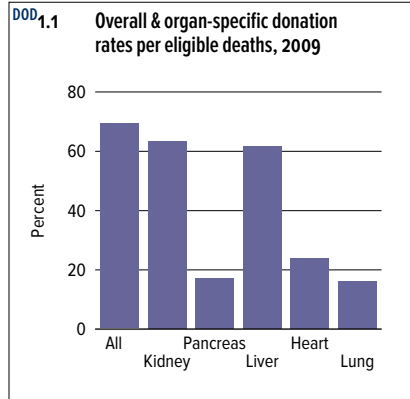
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*Through organ donation,
Jeff's kindness and generosity
toward others has been
extended to his life after death.
For us, his family, it continues
to remind us of who he was
and why we miss him.*

Kent, donor dad



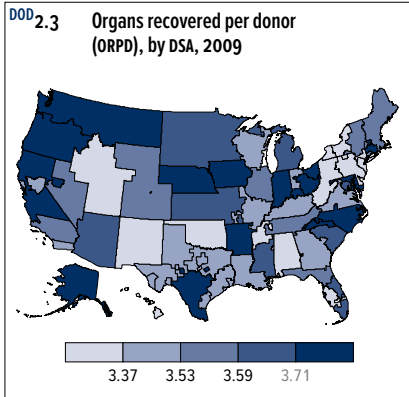
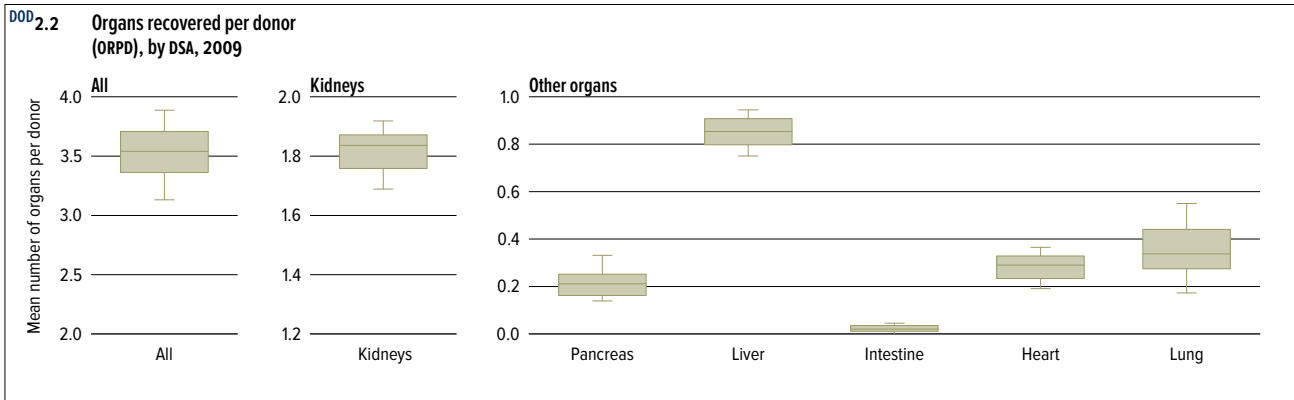
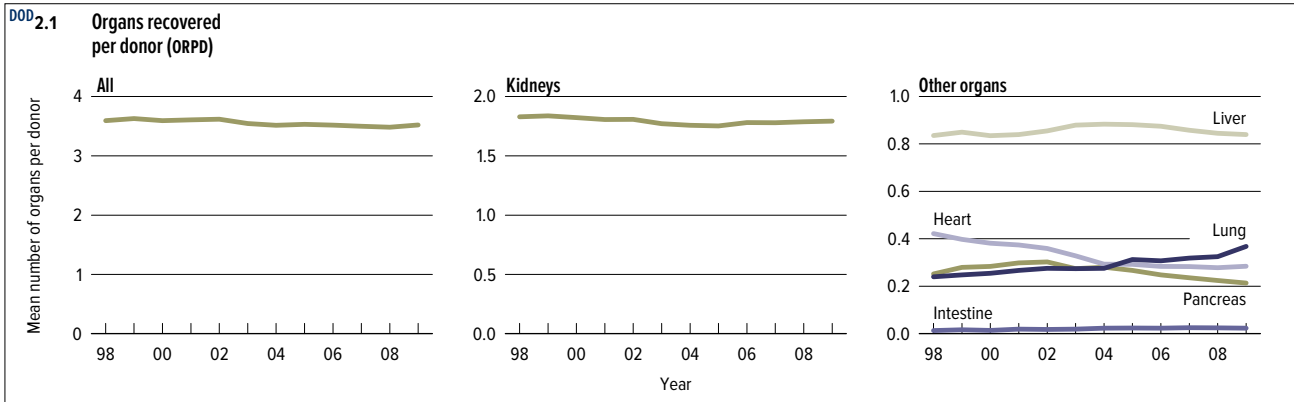
organ-specific donation rates

gible deaths, where an eligible death for organ donation is defined as the death of a patient aged 70 years or younger who is legally declared brain dead according to hospital policy and meets other specific organ donor eligibility requirements. The donation rate varied by organ type and is presented as organ-specific rates (Figure 1.1). The organ-specific donation rates for kidney and liver donors were similar, and higher than rates for thoracic and pancreas donors. Among thoracic organs, organ-specific donation rates were

The donation rate is calculated as the number of deceased donors per 100 eli-

higher for heart donors than for lung donors (note that throughout this chapter, lung donation refers to 1 or 2 lungs recovered). The overall donation rate was 69.4 per 100 eligible deaths in 2009.

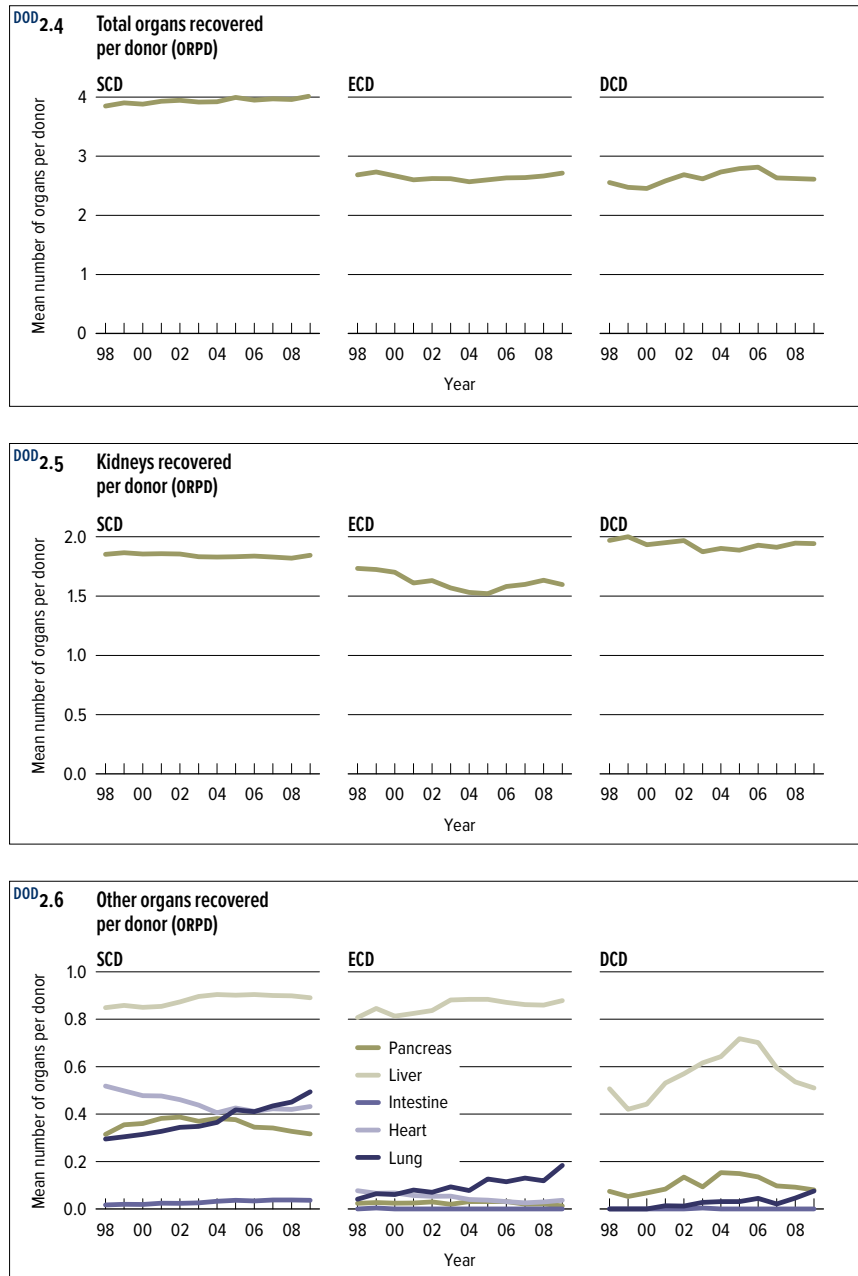
The organ donation rate varies geographically. The lowest organ donation rate was 50.8 and the highest was 90.7 per 100 eligible deaths (Figure 1.2). Factors such as donor age and ethnicity may play a role in this variation. Geographic variation suggests opportunities to share best practices from regions with high organ donation rates to improve the overall rate. The organ donation rate and organ-specific donation rates, along with the adjusted rates, are provided biannually in the SRTR's program-specific reports to all organ procurement organizations (OPOs).



organs recovered per donor

Over the past 12 years, the number of organs recovered per donor has been relatively stable, at about 3.5 (Figure 2.1). The number of lungs recovered per donor increased from 0.28 in 2004 to 0.37 in 2009. The number of hearts recovered per donor decreased from 0.38 in 2000 to 0.28 in 2009. The number of pancreata recovered per donor also decreased, from 0.28 in 2000 to 0.21 in 2009.

The number of organs recovered per donor varied widely across DSAs, with a low of 2.9 and a high of 4.1 per donor (Figures 2.2 and 2.3). The mean number of kidneys recovered per donor across DSAs was 1.8, the mean number of livers was 0.85, and the mean number of hearts was 0.28. Across DSAs, variation was wider in the number of lungs recovered per donor, compared with the number of hearts, with a mean of 0.35 lungs recovered per donor. The presence or absence of a lung transplant program within an appropriate distance from the recovering hospital may explain the wider variation across DSAs for lungs.

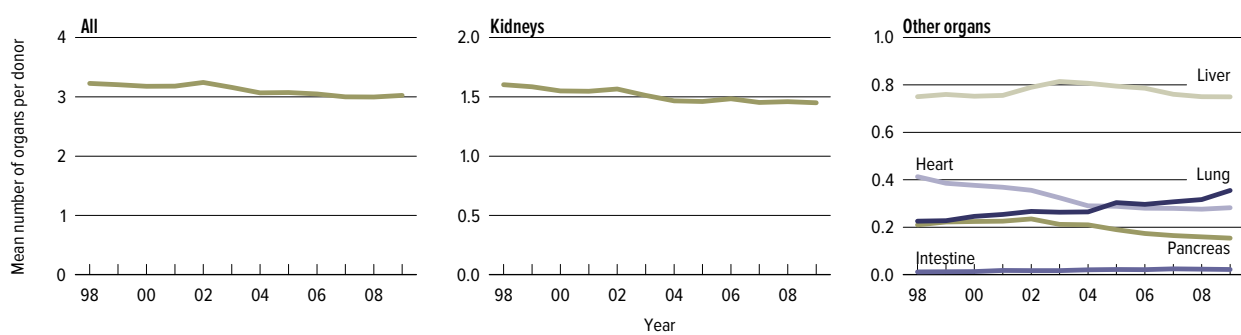


organs recovered per donor

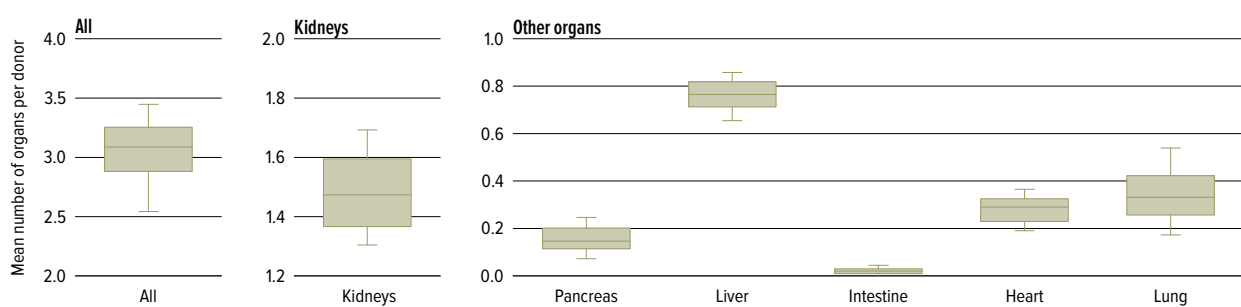
The number of organs recovered per donor varied depending on donor type, SCD versus ECD or DCD. Over the past 12 years, more organs were recovered per donor from SCDs than from ECDs or DCDs (Figure 2.4). In 2009, 4.0 organs per donor were recovered from SCDs, compared with 2.7 from ECDs and 2.6 from DCDs (Figure 2.4). In 2009, 1.9 kidneys per donor were recovered from DCDs (Figure 2.5). In contrast, 1.8 and 1.6 kidneys per donor were recovered from SCDs and ECDs, respectively. This trend of more organs re-

covered per donor from DCDs than from SCDs and ECDs was not seen for organs other than the kidney (Figures 2.6). In 2009, the number of livers recovered per donor from SCDs was similar to the number recovered per donor from ECDs. The number of livers recovered per donor from DCDs has declined since 2006 and is much lower than the number of kidneys recovered from DCDs. For ECDs, the next most common organ recovered per donor after liver was lung. For DCDs, the next most common organ recovered per donor after liver was pancreas. The number of pancreata recovered per donor from DCDs has declined since 2005, and the number of lungs recovered per donor from DCDs has increased since 2007.

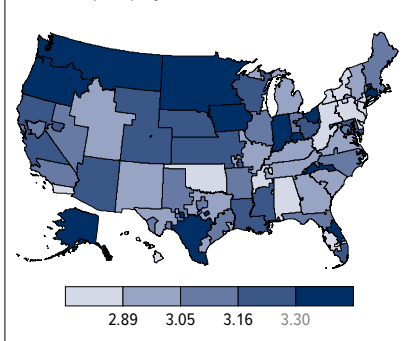
3.1 Organs transplanted per donor (OTPD)



3.2 Organs transplanted per donor (OTPD), by DSA, 2009



3.3 Organs transplanted per donor (OTPD), by DSA, 2009

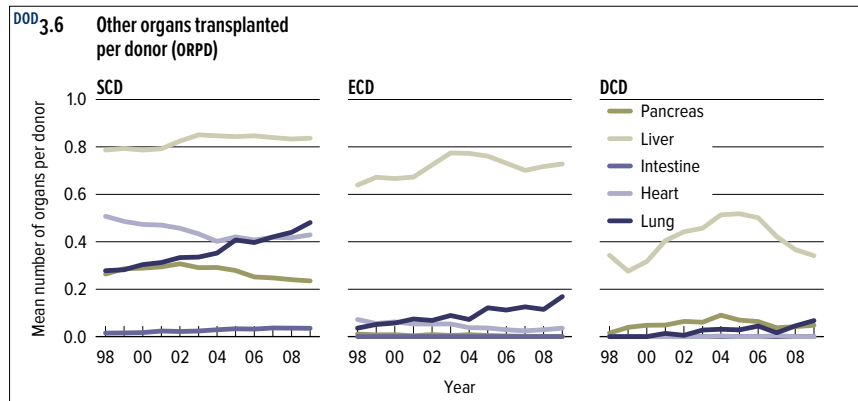
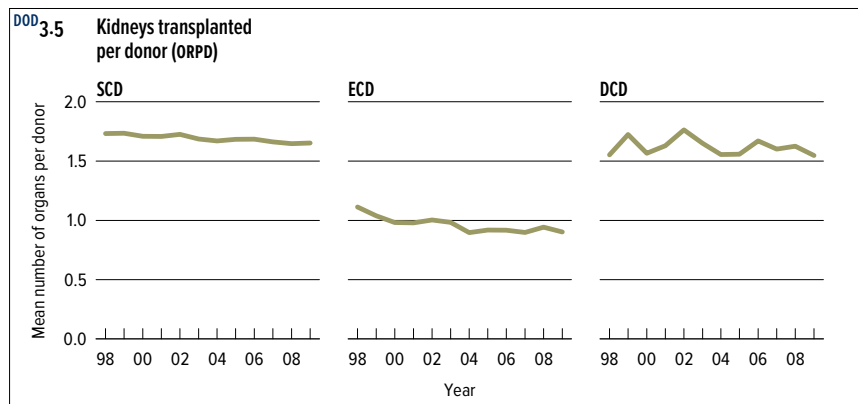
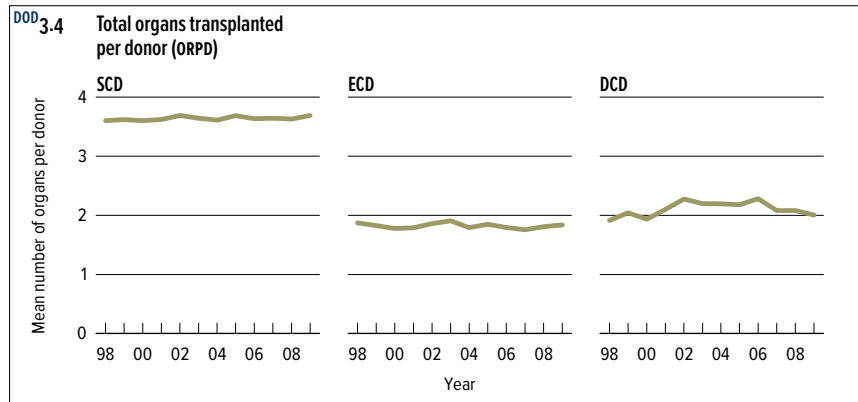


organs transplanted per donor

Over the past 12 years, the total number of organs transplanted per donor has declined slightly; approximately 3.0 organs per donor were transplanted in 2009 (Figure 3.1). Over the same period, the number of kidneys transplanted per donor declined only slightly. Numbers of livers, hearts, and pancreata transplanted per donor have also declined slightly. In contrast, the number of lungs transplanted per donor has increased, likely reflecting an increased de-

mand for lung transplants. The number of intestinal transplants per donor, albeit low, has remained stable.

In 2009, by DSA, the mean number of organs transplanted per donor was 3.1. Variation across DSAs was wide, ranging from a low of 2.4 to a high of 3.6 (Figures 3.2 and 3.3). The mean number of kidneys transplanted per donor across DSAs was 1.5, the mean number of livers transplanted per donor was 0.76, and the mean number of hearts transplanted per donor was 0.28. Across DSAs, variation was wider in the number of lungs transplanted per donor compared with the number of hearts. The mean number of lungs transplanted per donor was 0.34.

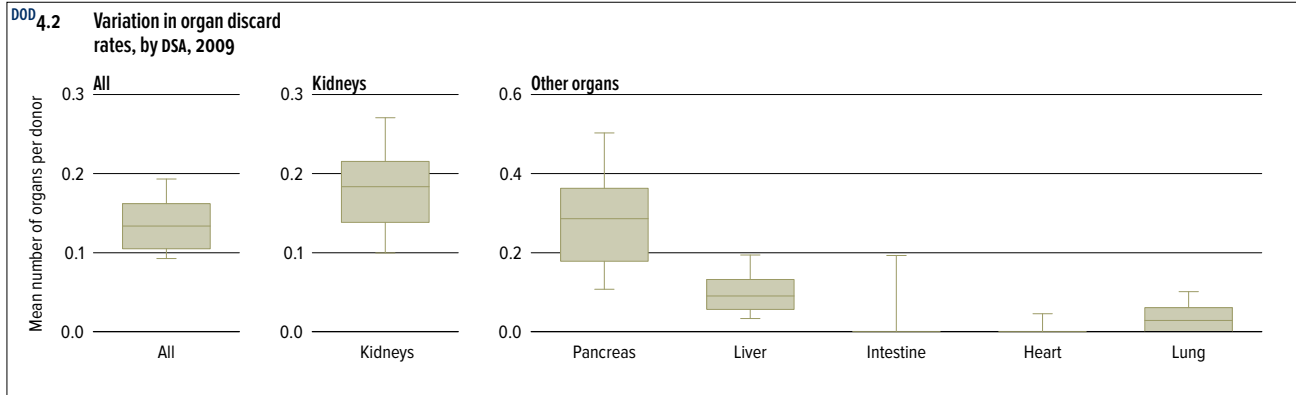
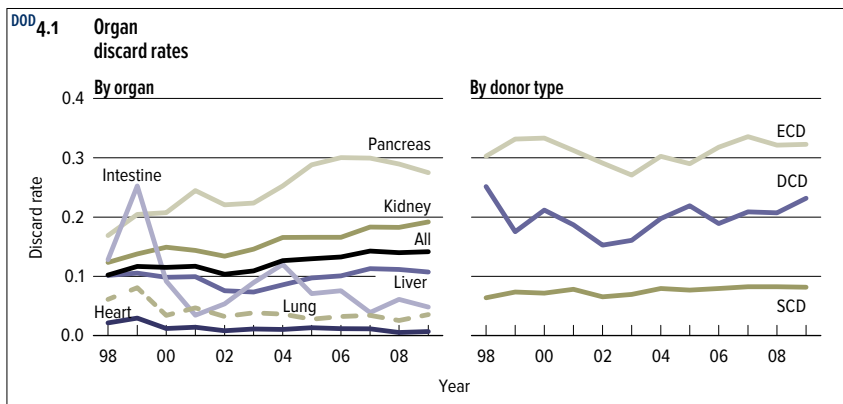


organs transplanted per donor

Not surprisingly, the number of organs transplanted per donor varied according to whether the donor was SCD, ECD, or DCD. Over the past 12 years, more organs were transplanted per donor from SCDs than from ECDs or DCDs (Figure 3.4). In 2009, 3.7 organs per SCD were transplanted, compared with 1.8 per ECD and 2.0 per DCD. Similarly, in 2009, 1.7 kidneys were transplanted per SCD, compared with 0.9 per ECD and 1.6 per DCD (Figure 3.5). Compared with kidneys, even fewer other organs were transplanted from ECDs and especially from DCDs, likely due to the

relatively greater sensitivity of non-kidney organs to ischemia (Figure 3.6). For example, in 2009, 0.84 livers were transplanted per SCD, compared with 0.73 per ECD and only 0.34 per DCD. Compared with kidneys and livers, per ECD donor, even fewer pancreata (0.00 per donor), hearts (0.04 per donor), and lungs (0.17 per donor) were transplanted. Likewise, compared with kidneys and livers, per DCD donor, many fewer pancreata (0.05 per donor), hearts (0.00 per donor), and lungs (0.07 per donor) were transplanted.

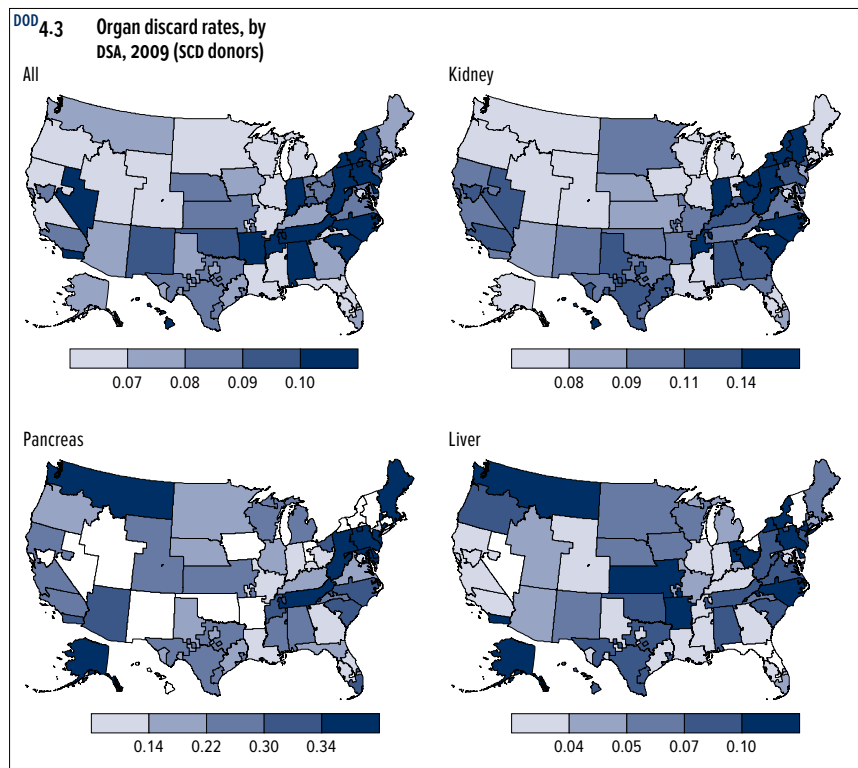
Over time, the number of organs transplanted per donor has changed little in SCD, ECD, and DCD donors. The exception is the increase in number of lungs transplanted per donor, probably reflecting the increase in lung transplantation in general (Figure 3.6).



organ discards

The number of organs discarded is calculated by subtracting the number of organs transplanted from the number of organs recovered, and the discard rate divides this number by the number of organs recovered. From 2002 to 2007, the overall organ discard rate for all organs combined increased from 0.10 per donor to 0.14 per donor, but this rate has remained stable since 2007 (Figure 4.1). For kidneys, the organ discard rate has increased since 2002, reaching 0.19 per donor in 2009. In contrast, the organ discard rate for pancreata declined from 2007

to 2009. Over the same period, the organ discard rates for livers, lungs, and hearts have been stable. The discard rate for SCDs was lower than the rates for DCDs and ECDs (Figure 4.1). In 2009, the mean number of organs discarded per donor was 0.14, but variation across DSAs was wide, ranging from a low of 0.07 to a high of 0.28 organs discarded per donor (Figure 4.2). By organ, the highest discard rate was for pancreata (0.27 per donor), followed by kidneys (0.19) and livers (0.11). The discard rates for intestines (0.05 per donor), hearts (0.01), and lungs (0.04) were considerably lower across all DSAs.

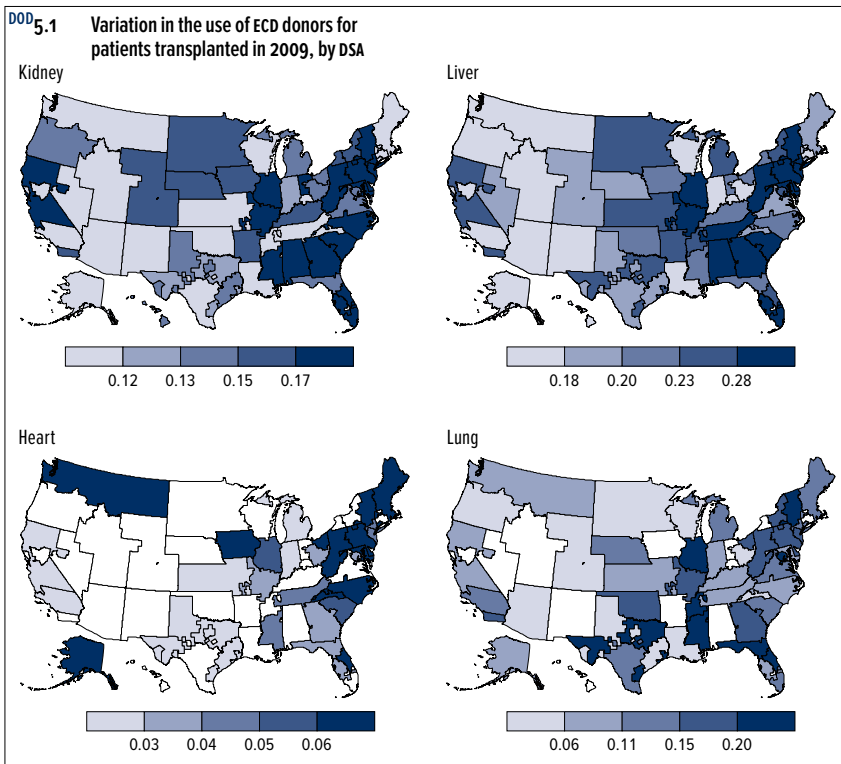


organ discards

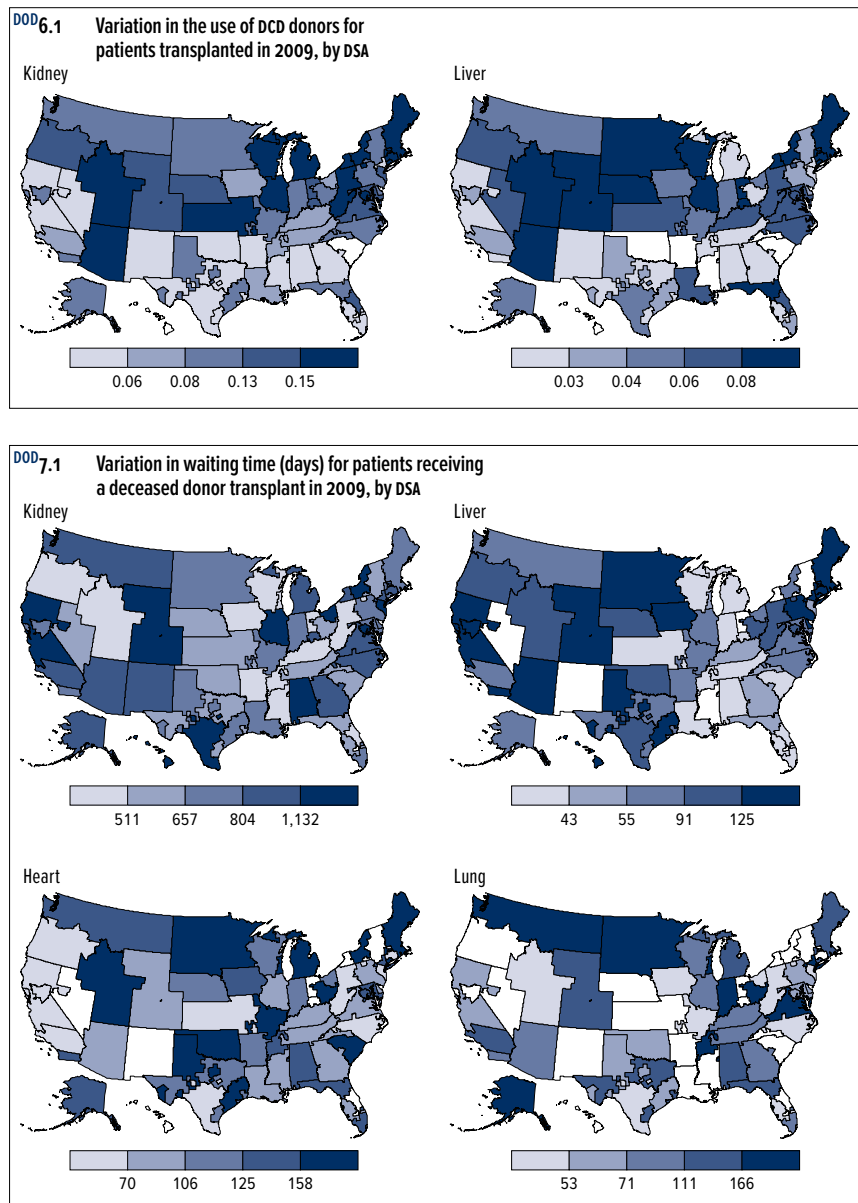
The discard rate for SCDs varied by DSA in 2009 (Figure 4.3). Discard rates in a region may vary by organ. For example, for DSAs in the northwest, the lowest rates were for kidneys. In this same region, rates for pancreata and livers were higher compared with surrounding regions. Similarly, some DSAs in the mid-Atlantic region had the highest discard rates for kidneys but not the highest discard rates for pancreata. These

differences may reflect the activity and demand for organs from transplant centers more than they reflect characteristics of OPOs.

The geographical distribution of discard rates varies by organ. Discard rates are highest for pancreata, followed by kidneys and livers. The discard rates for hearts, lungs, and intestines are very low (and are thus not shown); for hearts and lungs, this is probably due to the organs being procured by the surgical team that intends to transplant them.



ECD donors In 2009, the rate of ECD donor use varied by DSA for kidneys, livers, hearts, and lungs (Figure 5.1). The rates of ECD donor use in a region may vary by organ. For example, the DSAs in the north-west had the lowest rate of ECD kidney use, and this same region had a relatively higher rate of ECD heart use compared with surrounding regions. However, the distribution of ECD kidney and liver use rates was relatively similar across the country. For example, the northeast and southeast had high rates of ECD kidney and liver use compared with surrounding regions. Because rates of ECD organ use vary across organs, the geographical distribution of the rates varies by organ. The range of ECD organ use rates was highest for livers, followed by kidneys, lungs, and finally hearts. The variation in use of ECD hearts is remarkable because many DSAs do not use ECD hearts. Use of ECD intestines and pancreata is not shown because none of the DSAs used these ECD organs in 2009.



DCD donors | waiting time

In 2009, rates of DCD organ use varied by DSA for kidneys and livers (Figure 6.1). However, distribution of DCD kidney and liver use rates was relatively similar across the country. The ranges of DCD use rates are higher for kidneys than for livers. Rates of DCD organs used varied geographically for kidneys and livers. Use of DCD intestines and pancreata is not shown because none of the DSAs used these DCD organs in 2009. A small number of DCD lungs were used.

Waiting times for patients who underwent transplant in 2009 varied by DSA (Figure 7.1). The range of waiting times varied by organ; the longest waiting times were for kidneys, followed by livers, hearts, and finally lungs. Longer waiting times in a region for one organ did not necessarily mean that the region also had longer waiting times for other organs.