



# **2019 EYE BANKING STATISTICAL REPORT**

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## 2019 Analysis of Surgical Use and Indications for Corneal Transplant

### Introduction:

The 2019 Eye Banking Statistical Report from the Eye Bank Association of America (EBAA) includes information on all EBAA member eye banks reporting data for the 2019 calendar year and represents an essentially complete picture of eye banking activity of these eye banks. Data on utilization of tissue are provided for all tissue recovered by EBAA eye banks, with detailed analysis of outcomes of tissue recovered with intent for transplant use.

### Changes to This Year's Analysis:

Starting in 2017, the summarized data for Indications for Transplant were segregated by where the tissue was used - domestically or internationally. Previously, the analysis of indications for transplant came from data for both internationally and domestically used corneas supplied by U.S. eye banks. However, the large number of unknowns, mostly from internationally used corneas, diminished the validity of the overall conclusions. As one can see in **figure 8**, the large percentage of unknown indications for transplant in U.S. tissue shipped internationally for transplant limits the validity of conclusions made about surgical indications in this combined pool. For this reason, the indications for transplant data (**Table 7**) is presented only on domestic utilization of corneas supplied by U.S. eye banks.

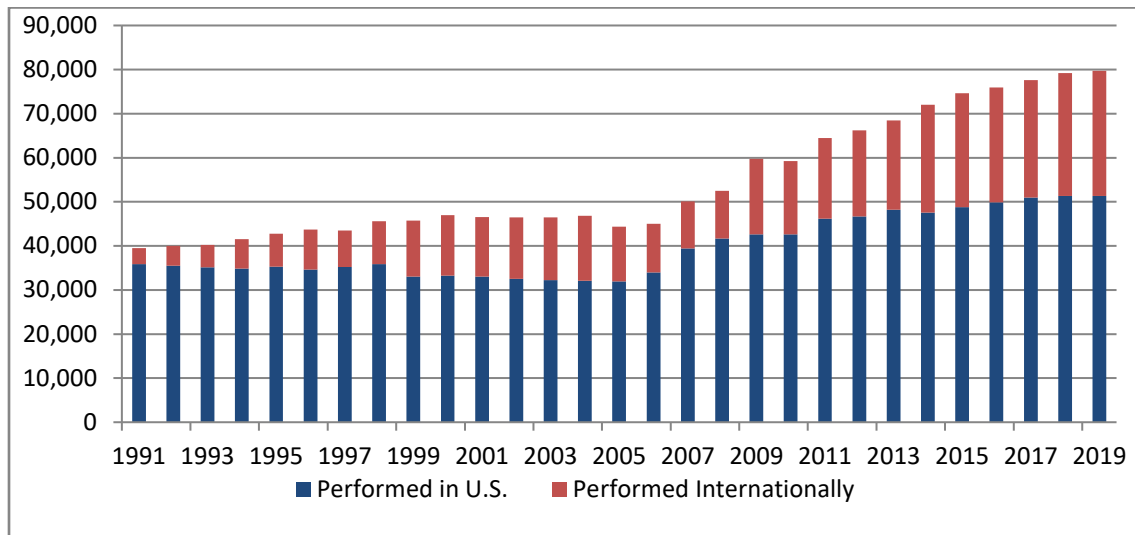
### Donations and Tissue Supply:

There were 57 U.S. eye banks reporting in 2019, the same number as in 2017. These banks reported 68,759 total donors (1% increase from 2018) and 136,130 total eyes/corneas recovered (2% increase from 2018). Please see **Table 1** below for details on donations and distribution. Intermediate-term preserved corneas, which included all refrigerated tissue stored in Optisol GS™, Life4°C™, or Cornea Cold™ used for full thickness and lamellar procedures, increased slightly from 79,207 in 2018 to 79,534 in 2019 (+0.4%). Despite recovering more tissue from more donors in 2019, the transplant rate decreased from 69.4% in 2018 to 68.7% in 2019 (-1.3%). Fewer corneas in long term preservation were distributed this year (8,614 in 2019 compared to 13,521 in 2018, - 36%).

**Table1: Total Donations and Distribution of Tissue in 2019**

<b>Donations</b>	<b>2018</b>	<b>2019</b>	<b>% Change</b>
Eye Banks Reported	57	57	0.0%
Total Whole Globes and Corneas Donated	133,576	136,130	1.9%
Total Number of Donors	68,102	68,759	1.0%
<b>Distribution</b>	<b>2018</b>	<b>2018</b>	<b>% Change</b>
Intermediate-Term Preserved Corneas	79,207	79,534	0.4%
Sclera	2,959	5,999	102.7%
Long-Term Preserved Corneas	13,521	8,614	(-36.3%)
Research	12,495	13,743	10.0%
Training	10,666	9,487	(-11.1%)

## Corneal Transplants Supplied by U.S. Banks in Intermediate-Term Storage



**Figure 1.** Usage of keratoplasty tissue in the U.S. has been essentially flat over the last 10 years, while tissue exported abroad during that time has increased slightly each year. Approximately one third of cornea tissue recovered by US eye banks is exported.

**Table 2: Corneal Transplant Supplied by U.S. Eye Banks**

Year	Total Provided by U.S.	Performed in U.S.	Performed Internationally
1991	39,515	35,831	3,684
1992	39,973	35,525	4,448
1993	40,215	35,173	5,042
1994	41,539	34,842	6,697
1995	42,740	35,300	7,440
1996	43,711	34,668	9,043
1997	43,492	35,209	8,283
1998	45,579	35,861	9,718
1999	45,765	33,020	12,745
2000	46,949	33,260	13,689
2001	46,532	33,035	13,497
2002	46,440	32,559	13,881
2003	46,436	32,240	14,196
2004	46,841	32,106	14,735
2005	44,329	31,952	12,377
2006	45,035	33,962	11,073
2007	50,122	39,391	10,731
2008	52,487	41,652	10,835
2009	59,784	42,606	17,178
2010	59,271	42,642	16,629
2011	67,590	46,196	18,307
2012	68,681	46,684	19,546
2013	72,736	48,229	20,213
2014	76,431	47,530	24,483
2015	79,304	48,792	25,832
2016	82,994	49,869	26,057
2017	84,297	50,934	26,645
2018	85,441	51,294	27,913
2019	85,601	51,336	28,402

In 2019, U.S. eye banks continued to meet the growing needs of surgeons in the U.S but continued providing tissue for international surgeons. This trend demonstrates the continuing commitment of U.S. eye bank and donors to help meet international needs and reduce global blindness due to corneal disease (**Figure 1** and **Table 2**).

### Tissue Utilization:

Utilization of tissue supplied by U.S. eye banks is shown below in **Table 3** and includes all tissue supplied by domestic eye banks that is used both domestically and internationally. Total grafts in 2019 decreased from 85,441 in 2018 to 84,921 (-0.6%). Penetrating keratoplasty (PK) use decreased 0.4% in 2019 from 36,028 to 35,919. Tissue used for endothelial keratoplasty (EK) in 2018 increased 1.4% from 35,071 in 2018 to 35,555 in 2017. There was an 8.9% decrease in tissue used for lamellar keratoplasty (ALK) from 2,355 in 2018 to 2,146 in 2019, following a 7.3% decrease in 2018. The number of corneas used for keratolimbal allograft (KLA) increased from 87 in 2018 to 110 in 2019 (+26%) and corneas used for keratoprosthesis (K-Pro) increased 29.4% from 243 in 2018 to 267 in 2019 (+10%). The number of corneas used for ALK, KLA and K-Pro procedures remain relatively small: these three procedures combined made up just 3.1% of total grafts in the U.S again in 2019 (see below). U.S. eye banks also provided 23,230 corneas for research and training, continuing their long-standing commitment to education and advancement of cornea surgery.

**Table 3: Utilization of Tissue from U.S. Eye Banks in 2019**

Use of Donated Tissue	2014	2015	2016	2017	2018	2019
Corneal Grafts Total	76,431	79,304	82,994	84,297	85,441	85,601
Penetrating Keratoplasty	38,919	39,554	38,413	38,025	36,028	35,919
Anterior Lamellar Keratoplasty	1,953	2,201	2,386	2,541	2,355	2,146
Endothelial Keratoplasty	28,961	30,710	32,221	33,397	35,071	35,555
Keratolimbal Allograft	88	107	97	104	87	110
Keratoprosthesis (K-Pro)	294	364	313	344	243	267
Glaucoma Shunt Patch or other non-keratoplasty use	755	527	917	1,368	1,058	1,018
Other keratoplasty (experimental surgery)	17	19	65	232	64	44
Unknown or Unspecified	1,026	1,142	1,514	1,568	4,301	4,679
Sclera	3,345	3,225	3,380	3,253	2,959	5,999
Long-Term Preserved Corneas	7,223	11,672	18,133	12,543	13,521	8,614
Keratoplasty	938	737	1,335	197	298	126
Glaucoma Shunt Patching	6,212	10,843	16,683	12,345	13,066	8,420
Other Surgical Uses	73	92	115	1	157	68
Research	17,670	16,924	17,023	13,859	12,495	13,743
Training	9,295	10,003	9,916	10,539	10,666	9,487

### Domestic Use of Keratoplasty Tissue from US Eye Banks:

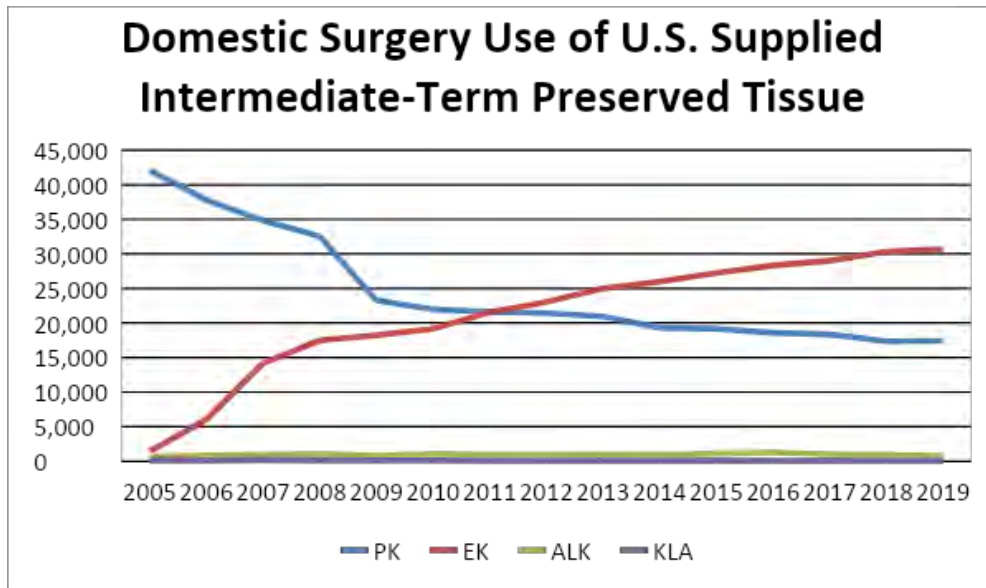
Trends in the use of tissue in the U.S. are shown in **Table 4** below. The number of penetrating grafts performed in the U.S. using intermediate-term preservation increased slightly this year from 17,347 to 17,409 but had decreased in each of the previous 13 years from a high of 42,063 in 2005 to a low of 17,347 in 2018. In the past 10 years, EK procedures increased from 1,308 in 2010 to 30,650 in 2019. The number of corneas used domestically for EK has increased every year since

tracking started in 2005 and surpassed PK in 2012, as noted in the graph in **Figure 2**. EK has been the most common keratoplasty procedure performed in the U.S. since 2012. The number of EK procedures (which includes both DSAEK and DMEK) increased 1% in 2019 to 30,650 from 30,336 in 2018. ALK procedures in the U.S. decreased 16% in 2019 to 745 after decreasing 7% in 2018 and 17% in 2017. KLA and K-Pro procedures have been essentially flat in the U.S. over the past 10 years. Together, ALK, KLAL and KPRO make up 2.2% of intermediate-term preserved tissue use in the U.S. in 2019.

**Table 4: Domestic Use of Intermediate-Term Preserved Tissue from U.S. Eye Banks Annual Comparison 2010 – 2019**

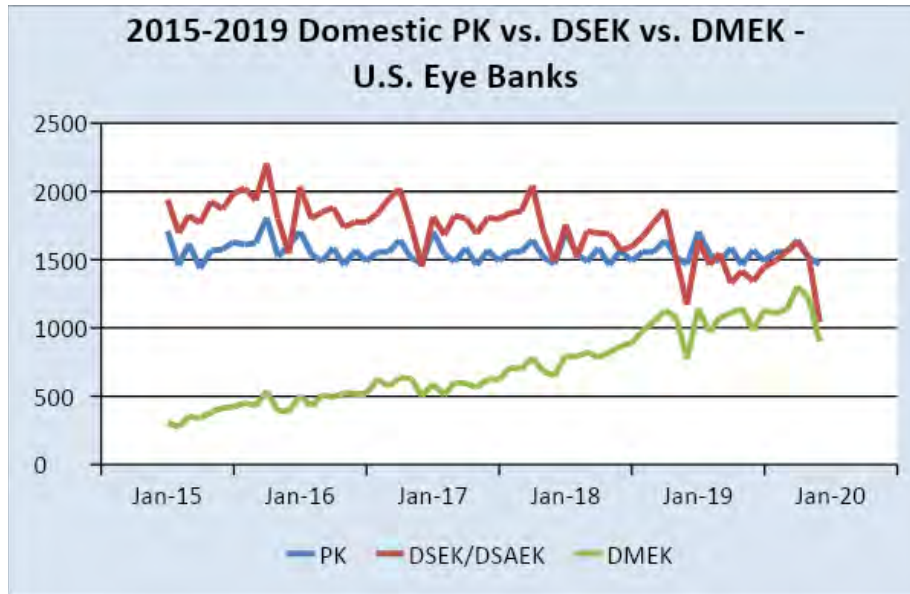
Domestic Surgery Use	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Penetrating Keratoplasty	21,970	21,620	21,422	20,954	19,294	19,160	18,579	18,346	17,347	17,409
Endothelial Keratoplasty	19,159	21,555	23,049	24,987	25,965	27,208	28,327	28,993	30,336	30,650
Anterior Lamellar Keratoplasty	1,041	932	883	951	914	1,115	1,232	1,027	884	745
Keratolimbal Allograft	130	69	80	91	80	97	82	93	68	95
K-Pro	342	332	236	223	260	323	279	304	225	251

**Domestic PK vs. EK vs. ALK Surgery Trends 2005-2018**



**Figure 2: Domestic PK vs. EK vs. ALK Surgery Trends.** The relative frequency of PK, EK, and ALK procedures performed in the U.S. over the last 15 years can be seen above. In 2012, the EK procedures exceeded PK.

### Domestic PK, DSEK, and DMEK Trends, 2015-2019



**Figure 3:** The number of domestic PK, DSAEK, and DMEK procedures using tissue from U.S Eye Banks are shown monthly for the last five years. In this graph, PK appears constant, DSAEK is decreasing slightly, and DMEK is increasing. DMEK growth has been linear since 2015, similar to the growth profile of DSAEK starting in 2005.

**Table 5: Annual Domestic Endothelial Keratoplasty Numbers (2013 - 2019)**

Domestic Surgery Use	2013	2014	2015	2016	2017	2018	2019
Total Endothelial Keratoplasty Procedures	24,987	25,965	27,208	28,327	28,991	30,336	30,650
DSEK, DSAEK, DLEK Procedures	23,465	23,100	22,514	21,868	21,337	19,526	17,428
DMEK or DMAEK Procedures	1,522	2,865	4,694	6,459	7,628	10,773	13,215
PDEK					21	26	6
Other EK					7	11	1

Domestic Endothelial Keratoplasty numbers are shown above in **Table 5**. The increased use of DMEK tissue has accounted for the increase in endothelial keratoplasty numbers since 2013 as DSAEK numbers declined slightly as DMEK numbers have risen since then. Collection of PDEK and other EK procedures started in 2017. DMEK procedures increased 23% in 2019, compared to 41% increase in 2018 and 18% in 2017. DSAEK procedures declined 11% in 2019.

Interestingly, there were 17,409 PKs, 17,428 DSAEK, and 13,215 DMEK procedures performed in the U.S. in 2019. As PK and DSAEK procedures decrease and DMEK increases, there will be likely be a similar number of all three procedures performed in 2020.

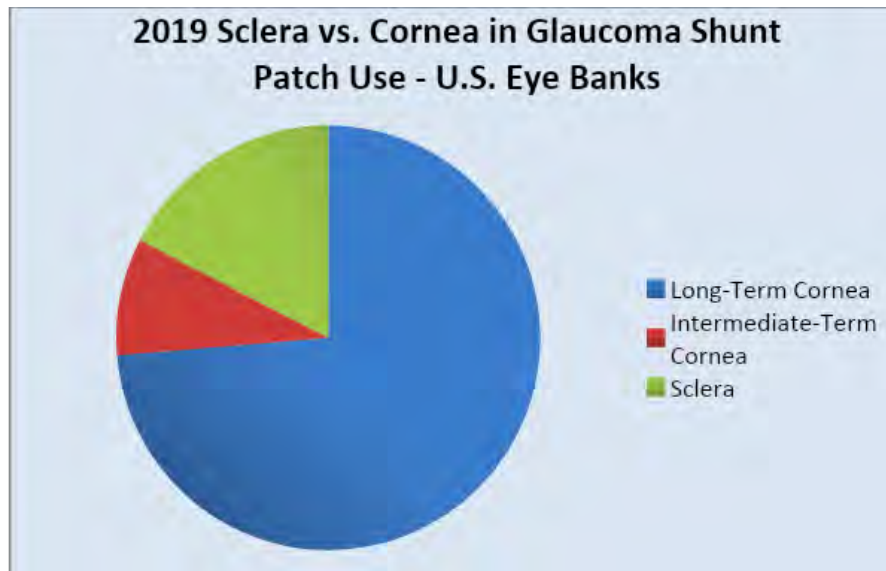
## Tissue for Glaucoma Shunts:

Use of eye bank tissue to cover glaucoma shunt procedures is shown below in **Table 6**. In 2011, sclera was the most commonly used tissue for glaucoma shunt patching but use of corneas stored in long-term solution (where endothelial cell counts are irrelevant) increased yearly from 2014 to 2018 but declined substantially in 2019 (36%). Corneal tissue used for covering tube shunts for glaucoma continues to be very popular with glaucoma surgeons. Figure 6 below shows that corneas in long-term storage medium used to cover glaucoma shunts were 74% of ocular tissue used for glaucoma in 2019. Of 8,614 long-term preserved corneas used in 2019, 8,420 were used for glaucoma shunt patching, 126 used for keratoplasty, and 68 for other surgical uses.

**Table 6. Ocular Tissue Used for Glaucoma Shunt Patching 2011-2019**

Ocular Tissue Used for Glaucoma Shunt Patching - U.S. Eye Banks										
Ocular Tissue Used for Glaucoma Shunt Patching	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Long-Term Cornea	3,802	4,435	4,040	6,212	10,843	16,683	12,345	13,066	8,420	
Intermediate-Term Cornea	604	676	687	755	527	917	1,368	1,058	1,018	
Sclera	4,285	2,260	2,293	2,199	2,175	1,944	2,266	1,900	1,989	

**Figure 4: Tissue Used for Glaucoma Shunt Patching 2019**



**Figure 4** shows that corneas in long-term storage medium comprise nearly 73.7% of all ocular tissue used to cover glaucoma shunts.



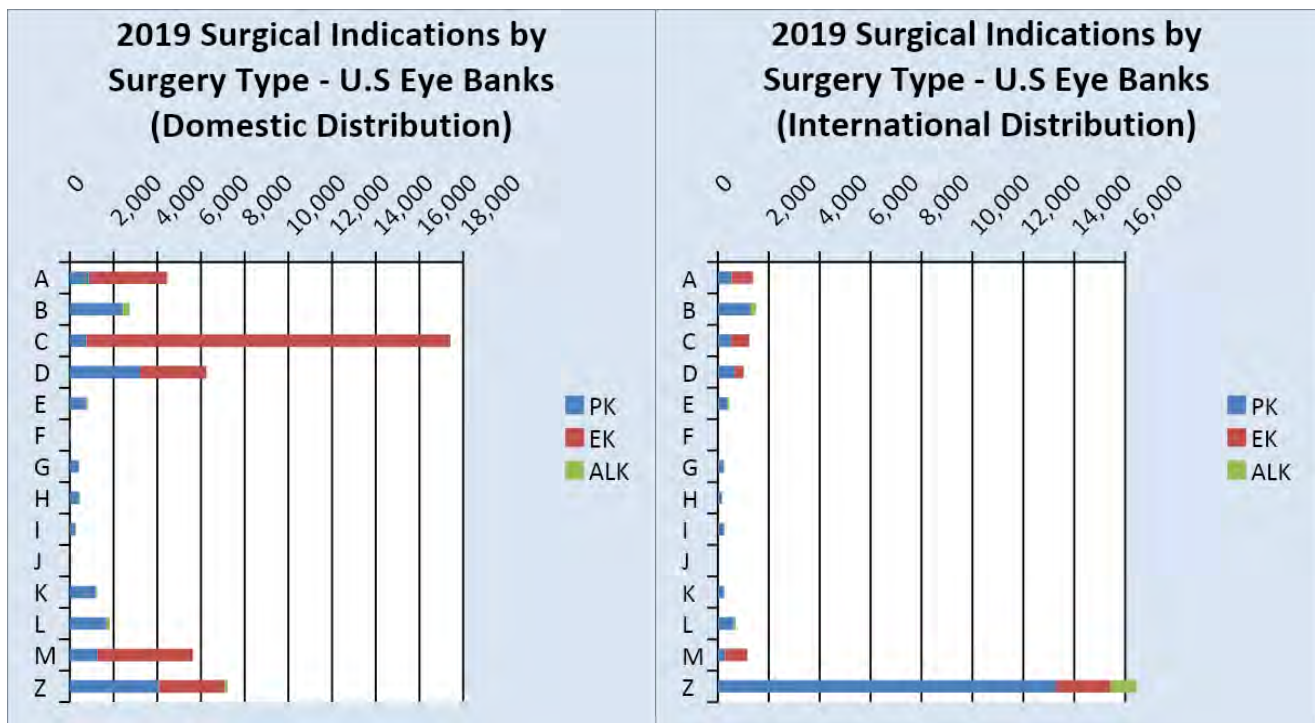
**Table 7: Indications for Keratoplasty Reported by US Banks, 2019**

<b>Indications for Penetrating Keratoplasty 2019</b>	<b>Domestic Use</b>		<b>International Use</b>	
A. Post-cataract surgery edema	866	5.0%	544	2.9%
B. Ectasias/Thinnings	2,433	14.0%	1,290	7.0%
C. Endothelial Dystrophies	765	4.4%	502	2.7%
D. Repeat Corneal Transplant	3,220	18.5%	662	3.6%
E. Other degenerations or dystrophies	744	4.3%	385	2.14%
F. Refractive	32	0.2%	5	0.0%
G. Microbial keratitis	419	2.4%	230	1.2%
H. Mechanical or chemical trauma	433	2.5%	158	0.9%
I. Congenital opacities	265	1.5%	254	1.4%
J. Pterygium	4	0.0%	0	0.0%
K. Non-infectious ulcerative keratitis or perforation	1,199	6.9%	251	1.4%
L. Other causes of corneal dysfunction or distortion	1,683	9.7%	643	3.5%
M. Other causes of endothelial dysfunction	1,263	7.3%	284	1.5%
Z. Unknown, unreported, or unspecified	4,083	23.5%	13,302	71.9%
<b>Total Indications for Penetrating Keratoplasty</b>	<b>17,409</b>		<b>18,510</b>	
<b>Indications for Anterior Lamellar Keratoplasty</b>				
	<b>Domestic use</b>		<b>International Use</b>	
B. Ectasias/Thinnings	304	40.8%	210	15.0%
D. Repeat Corneal Transplant	27	3.6%	12	0.9%
E. Other degenerations or dystrophies	67	9.0%	60	4.3%
F. Refractive	2	0.3%	2	0.1%
G. Microbial keratitis	12	1.6%	12	0.9%
H. Mechanical or chemical trauma	25	3.4%	6	0.4%
I. Congenital opacities	12	1.6%	3	0.2%
J. Pterygium	0	0.0%	0	0.0%
K. Non-infectious ulcerative keratitis or perforation	41	5.5%	15	1.1%
L. Other causes of corneal dysfunction or distortion	141	18.9%	53	3.8%
Z. Unknown, unreported, or unspecified	114	15.3%	1,028	73.4%
<b>Total for Anterior Keratoplasty</b>	<b>745</b>		<b>1,401</b>	
<b>Indications for Endothelial Keratoplasty</b>				
	<b>Domestic Use</b>		<b>International Use</b>	
A. Post-Cataract Surgery Edema	3,595	11.7%	837	17.1%
C. Endothelial Dystrophy	16,652	54.3%	733	14.9%
D. Repeat Corneal Transplant	3,020	9.9%	350	7.1%
M. Other Causes of Endothelial Dysfunction	4,366	14.2%	876	17.9%
Z. Unknown, unreported, or unspecified	3,017	9.8%	2,109	43.0%
<b>Total for Endothelial Keratoplasty</b>	<b>30,650</b>		<b>4,905</b>	

### Indications for Keratoplasty:

The indications for 73,620 keratoplasty procedures performed utilizing corneas provided by U.S. eye banks were segregated by domestic and international use and keratoplasty type (PK, ALK, and EK) in **Table 7**, above: Indications for Corneal Transplant Reported by U.S. Banks. The large number of “unknowns” is a persistent problem and compromises the analysis of keratoplasty procedures. For example, 71.9% of tissue shipped internationally for penetrating keratoplasty has no diagnosis provided. To minimize this adverse impact on the validity of the conclusions drawn, the data in **Table 7** has been split for domestic and international use for side by side comparison in **Figure 5** below. For this reason, the data in **Table 7** may not be suitable for comparison with previous years when domestic and international data were combined.

**Figure 5. 2019 Keratoplasty Indications: Domestic vs. International Distribution**



**Figure 5.** Surgical indication for corneal use for domestic (right panel) and international (left panel) tissue distribution. Note the high number of unknowns by Z.

- A** – Post Cataract Surgery Edema. **B** – Ectasias/Thinning. **C** – Endothelial Dystrophies.
- D** - Repeat Corneal Transplant. **E** – Other Degenerations/Dystrophies. **F** – Refractive.
- G** – Microbial Keratitis. **H** – Mechanical (Non-Surgical) or Chemical Trauma. **I** – Congenital Opacities. **J** – Pterygium. **K** – Non-Infectious Ulcerative Keratitis, Thinning or Perforation.
- L** - Other unknown Causes of Corneal Opacification or Distortion. **M** – Other causes of Endothelial Dysfunction. **Z** – Unknown or unreported.

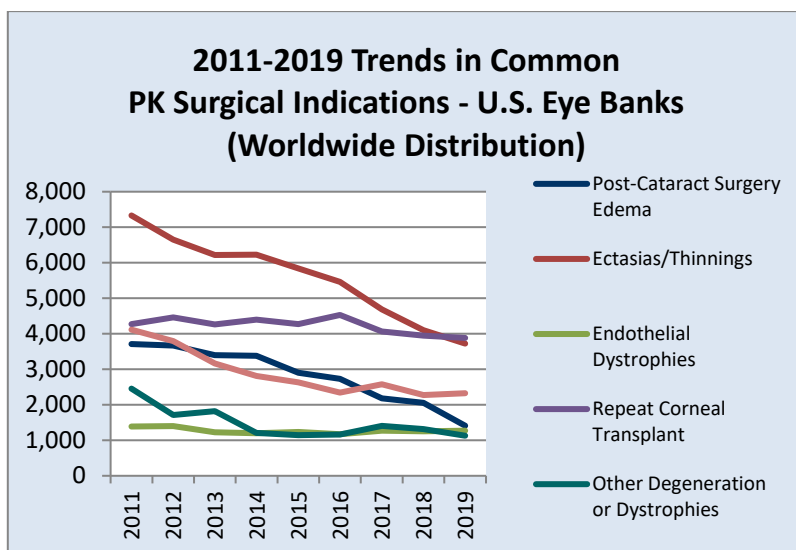
**Figure 5** shows domestic eye bank data from **Table 7** in bar graph format. Domestic utilization is shown on the right and international utilization is on the left. Note again the very high number of unknown indications listed in **Table 7** and **Figure 5** for keratoplasty tissue supplied

internationally. Because of the incomplete information on international tissue utilization, international data is **not** included in the specific indications for transplant data in **Table 8** below.

**Table 8**, Indications for Transplant, Domestic Utilization of Tissue from US Eye Banks, below, is arranged into four basic categories for which keratoplasty is performed: 1) endothelial cell failure, 2) stromal or full thickness (non-endothelial) disease, 3) re-grafts and 4) unknown. Specific diagnoses are listed in each general category. Endothelial cell failure is the leading indication as a group for keratoplasty from U.S. provided tissue. 56% of all keratoplasty procedures in the US in 2019 were performed for endothelial failure (Fuchs’ endothelial dystrophy, post cataract surgery edema and other causes of endothelial cell failure). Within this category, 90% of grafts for endothelial disease were EK and 10% were PK. 16% percent of all keratoplasty procedures were performed for stromal or full thickness disease: 92.9% were PK and 8.2% were ALK. The “Unknown” category was the second most common indication listed (15%), and repeat transplants were fourth (13%). Specific re-graft rates were PK 19%, EK 10% and ALK 4%.

Within these anatomic diagnosis categories, the most common specific indication reported for keratoplasty in 2019 was Fuchs’ Dystrophy (17,417, 36%), as has been the case the last 7 years. 95.6% of patients with Fuchs’ dystrophy were treated with EK and 4.4% had PK. Unknowns (7,214, 16%) and re-grafts (6,267, 13%) were the second and third most common indication for transplant. “Other causes of endothelial cell failure” (than Fuchs’) was the fourth most common indication (5,287, 11%) and Post Cataract Surgery Corneal Edema (PCE) was fifth (4,751, 10%). Excluding re-grafts and unknowns, the top three specific indications for keratoplasty were for endothelial disease.

Keratoconus and other ectasias were the sixth most common specific indication for transplant (2737, 6%) in 2019. There were 2,433 (89%) PK and 304 (11%) ALK procedures performed for keratoconus. Although the number of procedures for corneal ectasias (including keratoconus) continued to decrease, PK continues to be the preferred surgical procedure for treatment of corneal ectasia. The technical difficulty of ALK and uncertainty over reimbursement continue to hold this ratio essentially unchanged for the past five years. Treatment of keratoconus by cross-linking and newer technologies in RGP contact lens fitting have reduced the number of keratoplasty procedures for this indication (See **Figure 6**, below).



**Table 8: Domestic Indications for Keratoplasty Reported by US Banks, 2019**

Endothelial Cell Failure								
Surgical Diagnosis		PK		ALK		EK		TOTAL
A	Post-cataract surgery edema	866	19.4%	--	--	3,595	80.6%	4,461
C	Endothelial Dystrophies	765	4.4%	--	--	16,652	95.6%	17,417
M	Other causes of endothelial dysfunction	1,263	22.4%	--	--	4,366	77.6%	5,629
<b>Subtotal</b>		<b>2,894</b>	<b>10.5%</b>	<b>0</b>	<b>0.0%</b>	<b>24,613</b>	<b>89.5%</b>	<b>27,507</b>
		16.6% of PK				80.3% EK		56.4% of grafts

Stromal or Full Thickness (non-endothelial) Disease								
Surgical Diagnosis		PK		ALK		EK		TOTAL
B	Ectasias /Thinnings	2,433	88.9%	304	11.1%	--	--	2,737
E	Other Degenerations of Dystrophies	744	91.7%	67	8.3%	--	--	811
F	Refractive	32	94.1%	2	5.9%	--	--	34
G	Microbial Keratitis	419	97.2%	12	2.8%	--	--	431
H	Mechanical or Chemical Trauma	433	94.5%	25	5.5%	--	--	458
I	Congenital Opacities	265	95.7%	12	4.3%	--	--	277
J	Pterygium	4	100%	0	0.0%	--	--	4
K	Non-infectious ulcerative keratitis or perforations	1,199	96.7%	41	3.3%	--	--	1,240
L	Other causes of corneal dysfunction or distortion	1,683	92.3%	141	7.7%	--	--	1,824
<b>Subtotal</b>		<b>7,212</b>	<b>92.3%</b>	<b>604</b>	<b>7.7%</b>	<b>0</b>	<b>0%</b>	<b>7,816</b>
		41.4% of PK		81.1% of ALK				16.0% of grafts

Regraft								
Surgical Diagnosis		PK		ALK		EK		TOTAL
D	Repeat Corneal Transplant	3,220	51.4%	27	0.4%	3,020	48.2%	<b>6,267</b>
		18.5% of PK		3.6% of ALK		9.9% of EK		12.8% of grafts

Unknown / Unspecified								
Surgical Diagnosis		PK		ALK		EK		TOTAL
Z.	Unknown, unreported, or unspecified	4,083	56.6%	114	1.6%	3,017	41.8%	<b>7,214</b>
		23.5% of PK		15.3% of ALK		9.8% of EK		14.8% of grafts

	PK	ALK	EK	TOTAL
<b>Total for Each Procedure</b>	<b>17,409</b>	<b>35.7%</b>	<b>745</b>	<b>1.5%</b>
			<b>30,650</b>	<b>62.8%</b>
				<b>48,804</b>

## Conclusions:

- 1) Endothelial keratoplasty continues to be the most common domestic keratoplasty procedure in 2019 for the sixth year in a row (since 2012, see **Figure 2**).
- 2) 56% of all keratoplasty procedures were for endothelial disease in 2019 (**Table 8**).
- 3) The increase in domestic EK for the last 5 years is due to the increase in DMEK (**Table 5**).
  - a) DMEK increased 22.7% in 2019.
  - b) DSEK decreased 10.7% in 2019.
- 4) The number of domestic penetrating keratoplasty procedures using tissue in intermediate-term storage solution was essentially unchanged in 2019 (0.4% increase), but for the previous 13 years, PK procedures in the U.S. declined (since 2005, see **Table 4**).
- 5) As PK and DSAEK numbers decrease and DMEK numbers increase, the number of each of the three keratoplasty procedures performed in 2020 should be about the same (**Table 4, 5**).
- 6) The number of anterior lamellar keratoplasty, keratolimbal allografts and keratoprosthetic procedures have been essentially flat over the last 8 years. These three procedures make up 2.2% of all keratoplasty procedures performed in the U.S. (**Table 4**).
- 7) Corneas in long term storage solution used to cover glaucoma drainage devices decreased 36% in 2019, but still are the most common ocular tissue (74%) used by glaucoma surgeons (**Table 6**).
- 8) The number of keratoplasty procedures for keratoconus has decreased for the past 8 years and continues to fall due to cross-linking and newer RGP/scleral contact lenses (**Figure 6**).
- 9) 43% of U.S. eye bank tissue supplied internationally has no recipient diagnosis (**Figure 5**). Elimination of international tissue from U.S. Eye banks' recipient data analysis has reduced the overall unknown rate to 9.8% for domestic tissue in 2019. Eye banks still need to diligently try to collect recipient information on domestic and international tissue, as well as when exporting tissue to other eye banks.

Respectfully submitted,

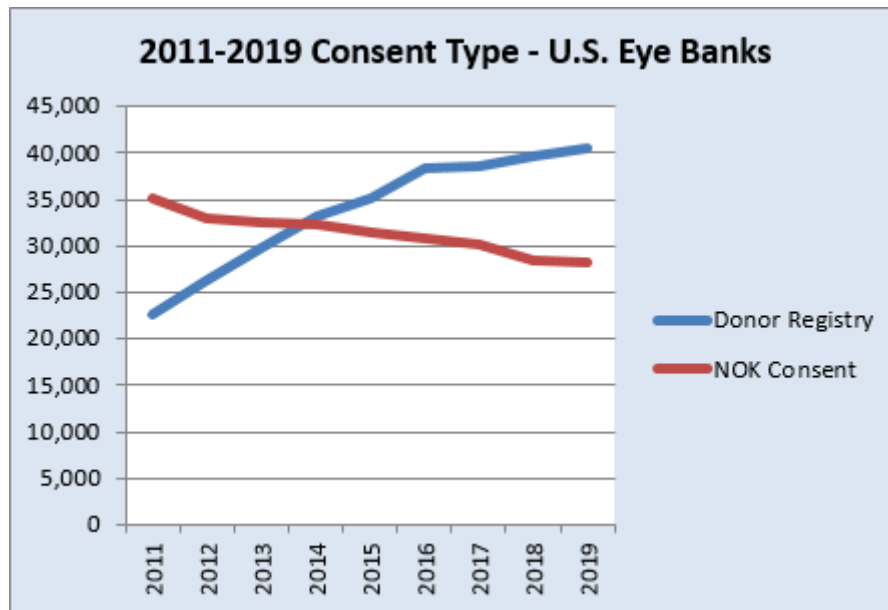
Woodford S. Van Meter, MD  
Professor of Ophthalmology  
University of Kentucky  
Medical Director, Lions Eye Bank of Lexington

## 2019 Eye Banking Statistics Reported by U.S. Banks: Death Referrals and Tissue Recoveries

Donations	2015	2016	2017	2018	2019
Number of Eye Bank Reporting Entities*	71	62	57	57	57
Total Whole Eyes and Corneas Donated	130,987	136,318	135,203	133,576	136,130
Total Number of Donors	66,526	69,049	68,565	68,102	68,759

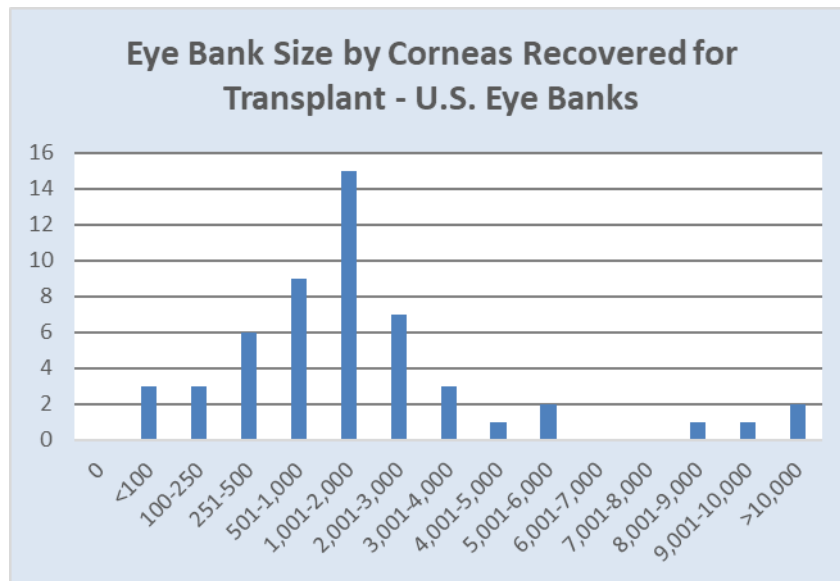
\* Reporting entities may not reflect number of physical eye banks

Death Referrals	2017	2018	2019
Total Death Referrals	713,795	718,221	717,316
Death referrals determined eligible	158,535	168,569	176,262
Tissue Recoveries			
Total Donors	68,565	68,102	68,759
Donors recovered not found on donor registry or known to have first person consent	30,106	28,469	28,217
Donors recovered found on donor registry or known to have first person consent	38,459	39,633	40,542
Eyes or Corneas Recovered with Intent for Surgical Use	123,716	123,222	124,843
Eyes or Corneas Recovered for Other Uses	11,487	10,354	11,287



## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Comparison of Eye Bank Cornea Recovery Rates

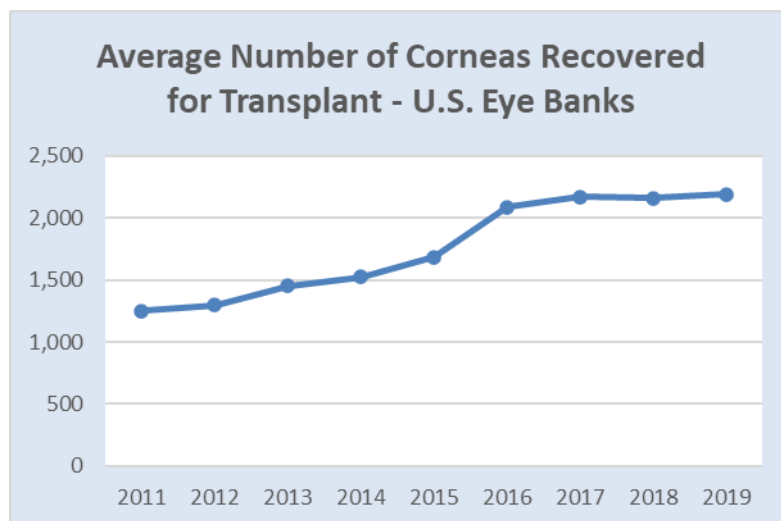
Eye Bank Activity - U.S. Eye Banks										
Recovered Corneas	2011	2012	2013	2014	2015	2016	2017	2018	2018	Trends
0	2	0	2	2	1	1	0	0	0	
<100	2	2	3	4	2	2	3	4	3	
100-250	5	5	5	3	5	3	3	2	3	
251-500	13	18	16	13	12	8	7	8	6	
501-1,000	15	15	14	17	12	13	9	9	9	
1,001-2,000	29	20	22	23	19	15	17	17	15	
2,001-3,000	5	6	8	6	8	9	6	6	7	
3,001-4,000	5	3	1	2	1	1	3	2	3	
4,001-5,000	2	2	2	3	2	2	2	1	1	
5,001-6,000	1	1	1	1	2	1	1	3	2	
6,001-7,000	1	0	0	0	1	1	0	1	0	
7,001-8,000	1	0	0	0	0	0	0	0	0	
8,001-9,000	0	1	0	0	0	0	1	0	1	
9,001-10,000	0	0	1	0	0	1	0	1	1	
>10,000	0	0	1	2	2	2	1	1	2	
Avg. Corneas Recovered for Transplant	1,253	1,297	1,452	1,527	1,686	2,088	2,170	2,162	2,190	
Number of Eye Banks	81	80	76	76	71	62	57	57	57	



## 2019 Eye Banking Statistics Reported by U.S. Banks: Referral Trends, Transplant and Conversion Rates

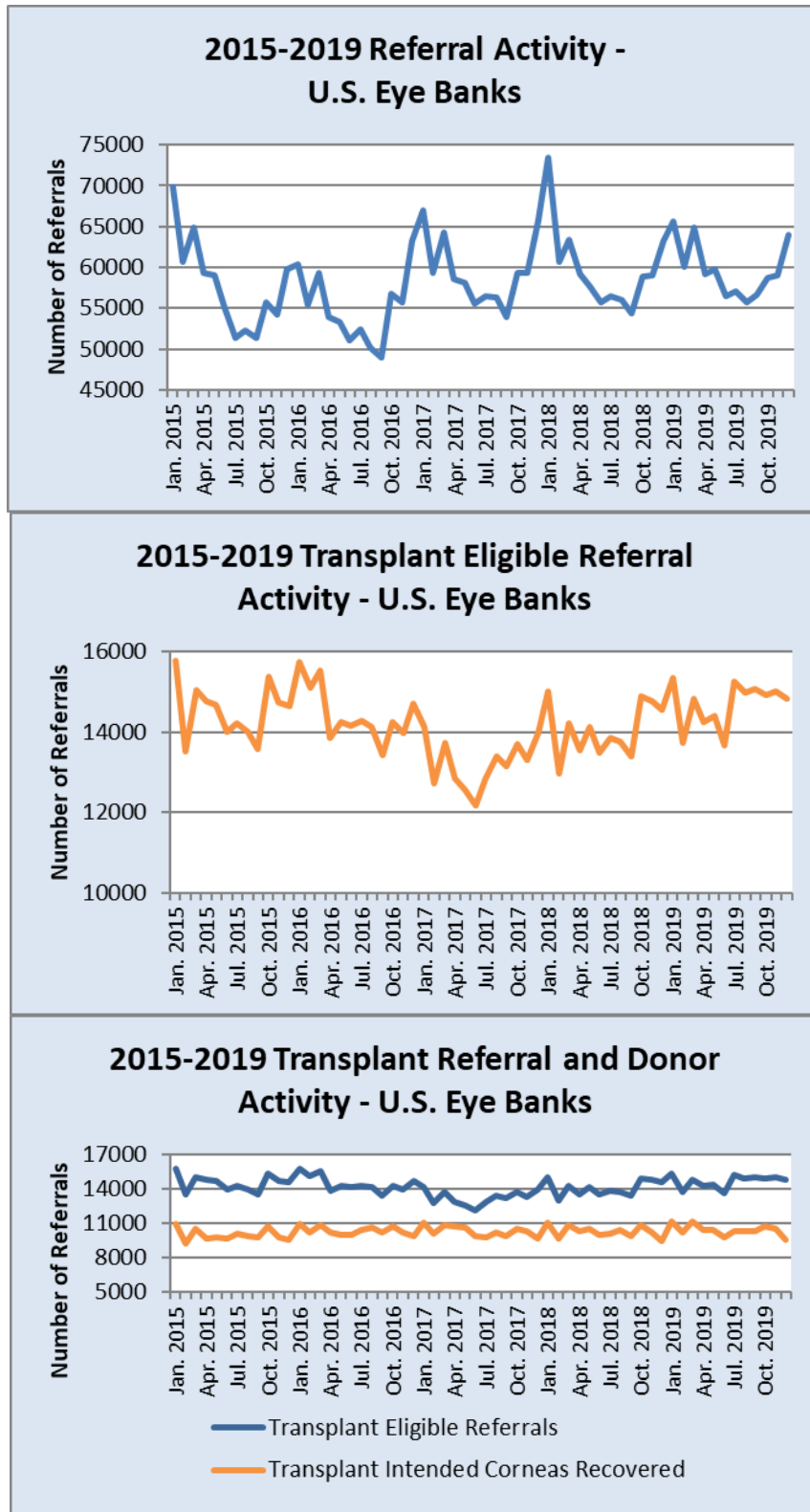
Transplant & Conversion Rates - U.S. Eye Banks					
Month	Transplant Rate	Conversion Rate	Death Referrals	Transplant Eligible Referrals	Transplant Intended Corneas Recovered
Jan. 2019	71.1%	36.8%	65,679	15,346	11,126
Feb. 2019	70.5%	37.5%	60,072	13,728	10,204
Mar. 2019	66.2%	38.4%	64,891	14,816	11,205
Apr. 2019	69.6%	37.2%	59,232	14,247	10,414
May 2019	71.4%	36.5%	59,819	14,410	10,445
Jun. 2019	69.8%	36.2%	56,504	13,664	9,820
Jul. 2019	73.1%	34.0%	57,091	15,244	10,283
Aug. 2019	71.4%	34.7%	55,772	14,966	10,302
Sep. 2019	69.4%	34.3%	56,595	15,061	10,270
Oct. 2019	72.9%	36.2%	58,674	14,915	10,719
Nov. 2019	71.5%	35.3%	59,020	15,024	10,550
Dec. 2019	72.1%	32.4%	63,967	14,841	9,505
2015 Total	66.3%	34.9%	693,449	174,349	119,687
2016 Total	66.6%	35.2%	674,459	179,316	124,649
2017 Total	68.3%	39.6%	713,795	158,532	123,716
2018 Total	69.4%	37.3%	718,221	168,569	123,222
2019 Total	68.7%	35.8%	717,316	176,262	124,843
2019 Avg.	N/A	N/A	59,776	14,689	10,404
Std. Dev.	1.9%	1.7%	3,368	556	478

\***Transplant rate** is the number of corneas used for transplant divided by the number recovered for transplant.  
**Conversion rate** is the number of transplant donors divided by the number of transplant eligible referrals.

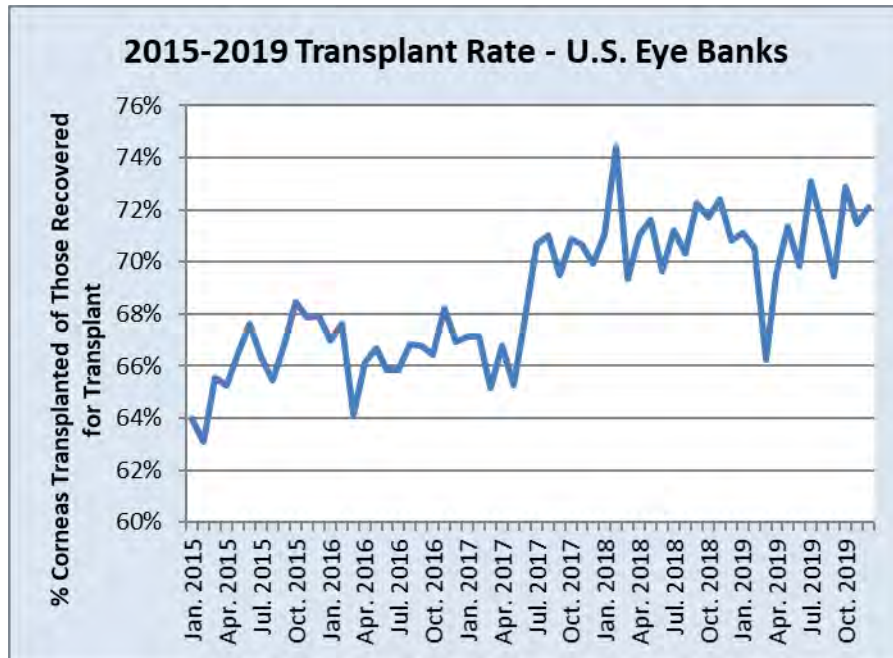




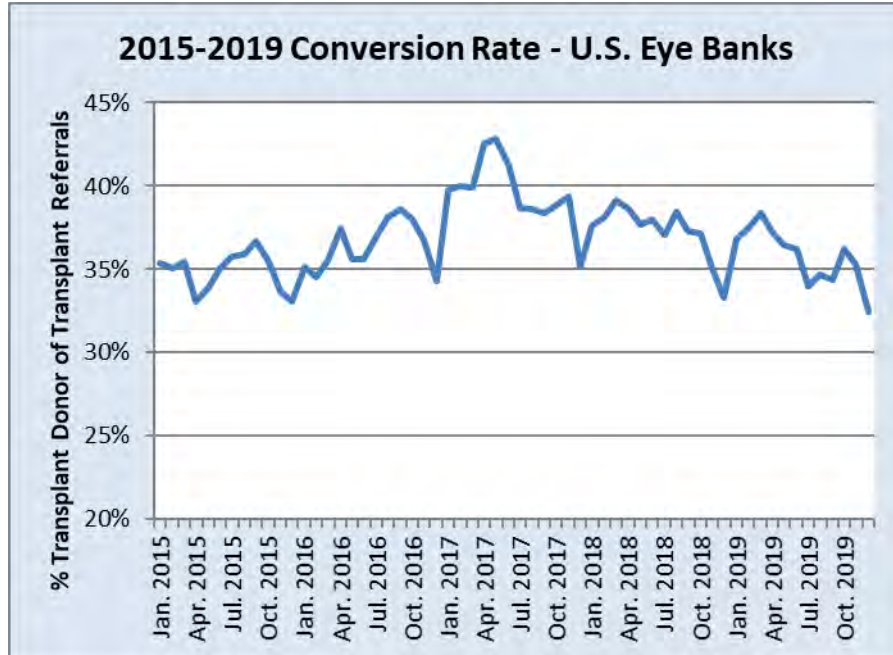
## 2019 Eye Banking Statistics Reported by U.S. Banks: Referral Trends, Transplant and Conversion Rates



## 2019 Eye Banking Statistics Reported by U.S. Banks: Transplant and Conversion Rates



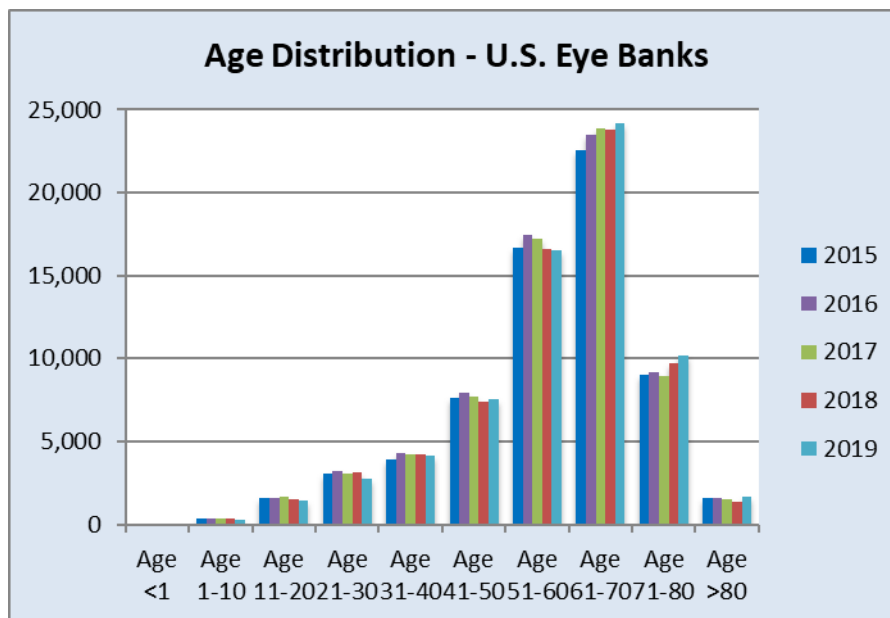
**Transplant rate** is the number of corneas used for transplant divided by the number recovered for transplant.



**Conversion rate** is the number of transplant donors divided by the number of transplant eligible referrals.

## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Donors by Age Reported by U.S. Banks

Age Demographics - U.S. Eye Banks										
Year	Age <1	Age 1-10	Age 11-20	Age 21-30	Age 31-40	Age 41-50	Age 51-60	Age 61-70	Age 71-80	Age >80
2015	15	359	1,602	3,035	3,917	7,657	16,717	22,586	9,055	1,583
2016	11	348	1,587	3,223	4,327	7,933	17,460	23,459	9,136	1,565
2017	13	324	1,643	3,079	4,249	7,669	17,244	23,913	8,959	1,472
2018	18	338	1,534	3,119	4,212	7,416	16,570	23,804	9,734	1,357
2019	6	310	1,435	2,778	4,145	7,535	16,490	24,151	10,209	1,700
<b>Monthly Avg</b>	1	26	120	232	345	628	1,374	2,013	851	142
<b>Std. Dev.</b>	0.5	7.6	10.7	18.5	21.2	32.6	66.7	94.8	64.1	26.0

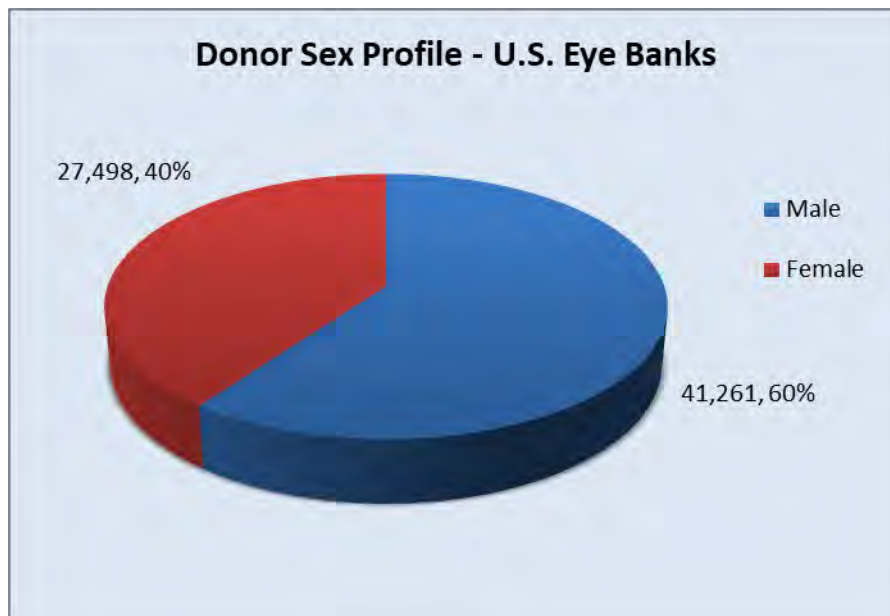


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## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Donors by Gender Reported by U.S. Banks

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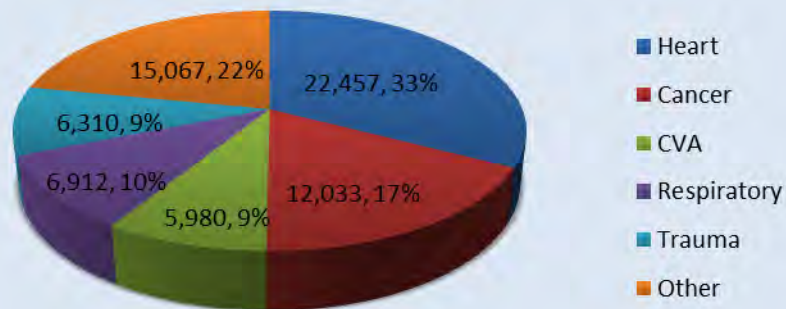
Sex Demographics - U.S. Eye Banks		
Year	Male	Female
2015 Total	40,990	25,536
2016 Total	42,079	26,970
2017 Total	40,898	27,667
2018 Total	40,856	27,246
2019 Total	41,261	27,498
Monthly Avg.	3,438	2,292
Std. Dev.	191.4	105.9



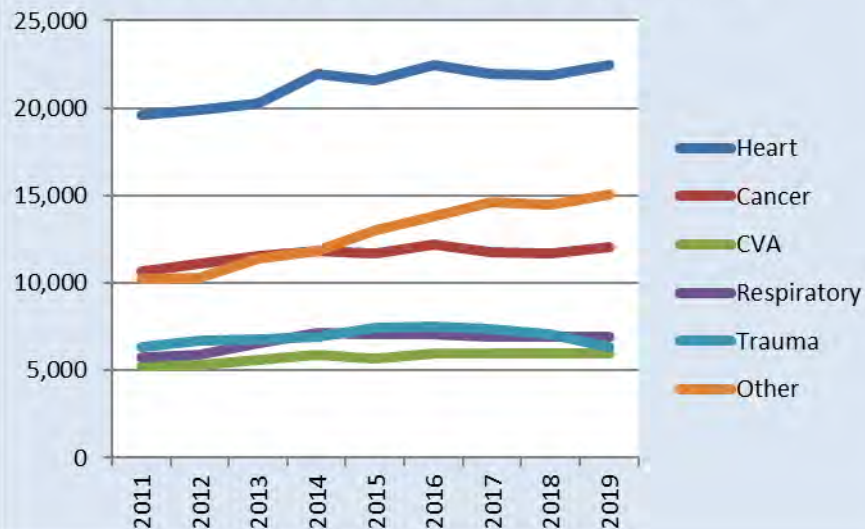
## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Cause of Death Reported by U.S. Banks

Cause of Death Demographics - U.S. Eye Banks						
Year	Heart	Cancer	CVA	Respiratory	Trauma	Other
2015	21,587	11,722	5,699	7,052	7,427	13,039
2016	22,447	12,201	5,987	7,104	7,479	13,831
2017	21,948	11,758	5,964	6,896	7,354	14,645
2018	21,911	11,724	5,979	6,909	7,064	14,515
2019	22,457	12,033	5,980	6,912	6,310	15,067
<b>Monthly Avg.</b>	1,871	1,003	498	576	526	1,256
<b>Std. Dev.</b>	121.3	69.9	34.7	59.1	41.0	59.3

### Donor Cause of Death Profile - U.S. Eye Banks



### Cause of Death Trends - U.S. Eye Banks



## 2019 Eye Banking Statistics Reported by U.S. Banks: Reasons Tissue Intended for Surgery Was Not Released

There are several reasons why tissue intended for surgery may not ultimately be used for surgery. These include positive serology results, defects noted at the time of evaluation (scars, infiltrates, low cell counts, etc.) and/or medical or social history information, all of which occur subsequent to initial screening and procurement.

Contraindications for Transplant <sup>1</sup>	2017		2018		2019	
<b>Positive or Reactive Test for Communicable Disease Agent or Disease</b>	<b>9,845</b>	<b>29.6%</b>	<b>10,065</b>	<b>31.2%</b>	<b>11,183</b>	<b>33.6%</b>
HIV Antibody (HIV I/II Ab)	216	0.6%	274	0.9%	265	0.8%
HIV Nucleic Acid Test (HIV NAT)	94	0.3%	96	0.3%	167	0.5%
Hepatitis B Surface Antigen (HBsAg)	986	3.0%	1,028	3.2%	1,344	4.0%
Hepatitis B Core Antibody (HBcAb)	4,789	14.4%	4,954	15.4%	5,115	15.4%
Hepatitis B Nucleic Acid Test (HBV NAT)	300	0.9%	350	1.1%	588	1.8%
Hepatitis C Antibody (HCV Ab)	1,936	5.8%	1,923	6.0%	1,986	6.0%
Hepatitis C Nucleic Acid Test (HCV NAT)	783	2.4%	685	2.1%	826	2.5%
Syphilis	357	1.1%	383	1.2%	331	1.0%
HTLV Antibody (HTLV I/II Ab)	80	0.2%	109	0.3%	103	0.3%
West Nile Virus Nucleic Acid Test (WNV NAT)	22	0.1%	8	0.0%	20	0.1%
Other Positive or Reactive Test	282	0.8	255	0.7%	438	1.3%
<b>Other Communicable Disease Testing Issue</b>	<b>385</b>	<b>1.2%</b>	<b>319</b>	<b>1.0%</b>	<b>323</b>	<b>1.0%</b>
<b>Medical Record or Autopsy Findings</b>	<b>7,614</b>	<b>22.9%</b>	<b>6,599</b>	<b>20.5%</b>	<b>6,650</b>	<b>20.0%</b>
Dementia / Neurological Issues	723	2.2%	732	2.3%	791	2.4%
Sepsis	3,304	9.9%	3,190	9.9%	3,114	9.4%
Sepsis - (determined by positive blood cultures)	1,355	4.1%	1,337	4.1%	1,352	4.1%
Sepsis - (determined by other indicators)	1,949	5.9%	1,853	5.8%	1,762	5.3%
Plasma Dilution	407	1.2%	315	1.0%	261	0.8%
Unknown Cause of Death	179	0.5%	132	0.4%	165	0.5%
Other	3,001	9.0%	2,230	6.9%	2,319	7.0%
<b>Medical/Social Interview</b>	<b>3,067</b>	<b>9.2%</b>	<b>3,083</b>	<b>9.6%</b>	<b>2,992</b>	<b>9.0%</b>
Travel	435	1.3%	507	1.6%	383	1.2%
Dementia / Neurological Issues	256	0.8%	312	1.0%	171	0.5%
Other	2,376	7.1%	2,264	7.0%	2,438	7.3%
<b>Body Exam</b>	<b>325</b>	<b>1.0%</b>	<b>292</b>	<b>0.9%</b>	<b>374</b>	<b>1.1%</b>
<b>Total eyes/corneas intended for transplant but not released for transplant</b>	<b>33,310</b>		<b>32,225</b>		<b>33,258</b>	

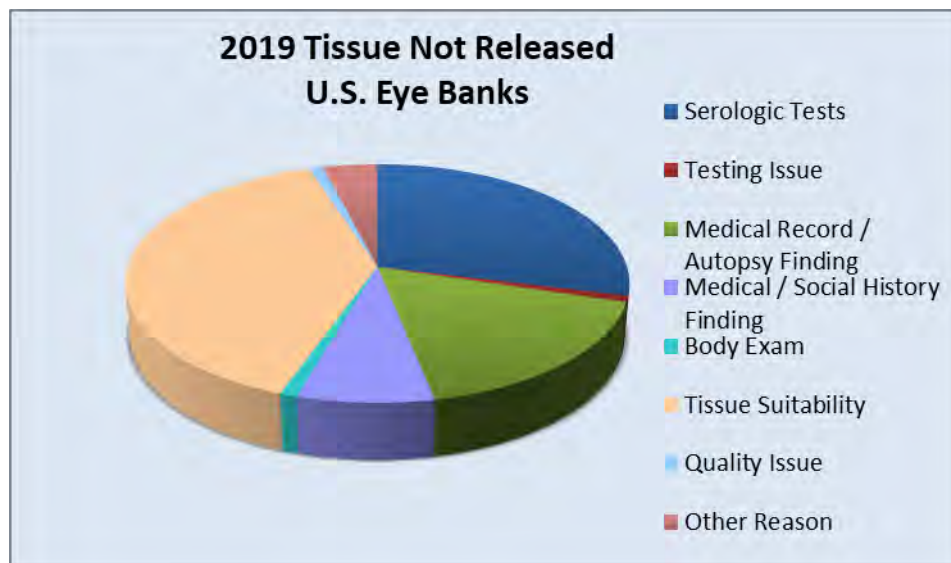
\*Percentages read from this table should be read as "of the tissue not released for transplant"

<sup>1</sup> Some tissues had multiple contraindications.

## 2019 Eye Banking Statistics Reported by U.S. Banks: Reasons Tissue Intended for Surgery Was Not Released

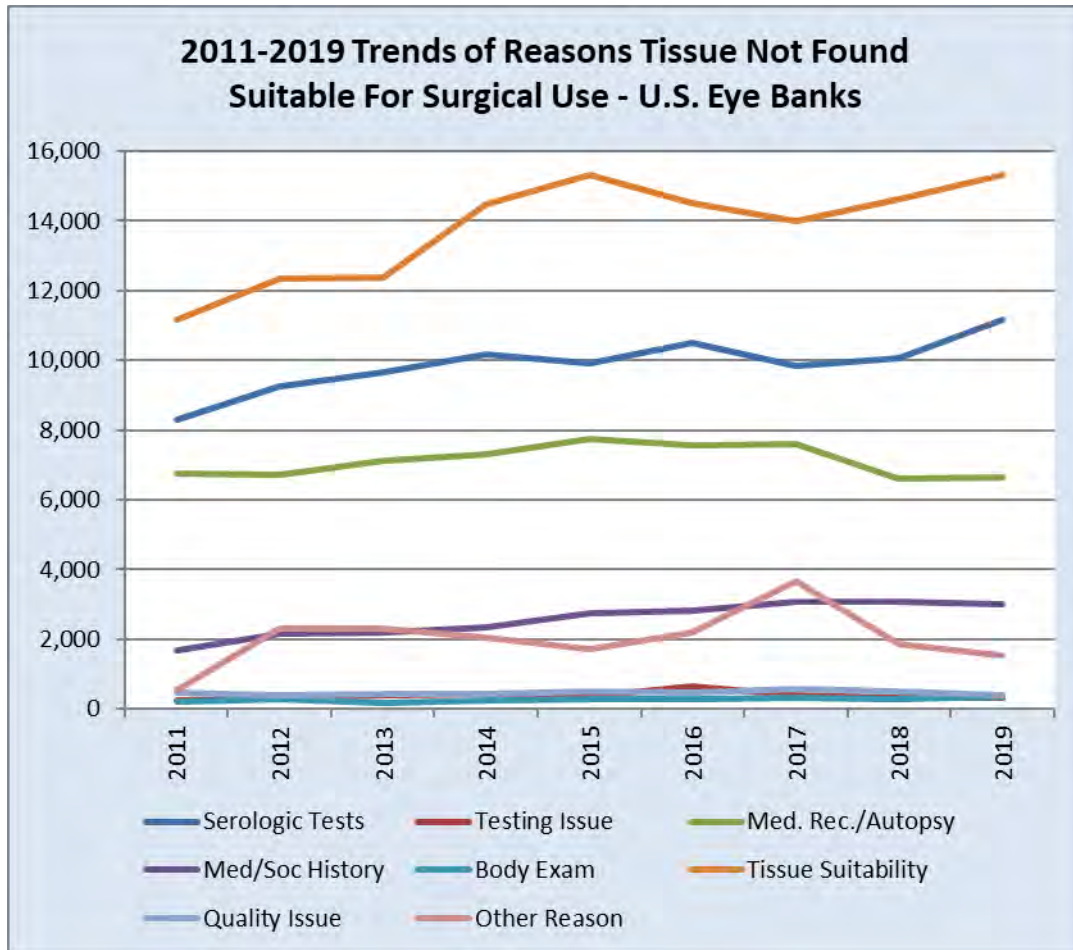
Contraindications for Transplant <sup>2</sup>	2017		2018		2019	
<b>Tissue Suitability (e.g. slit lamp/spec eval)</b>	<b>13,994</b>	<b>42.0%</b>	<b>14,631</b>	<b>45.4%</b>	<b>15,319</b>	<b>46.1%</b>
Epithelium	192	0.6%	218	0.7%	133	0.4%
Stroma	7,135	21.4%	7,092	22.0%	8,265	24.9%
Prior reactive surgery	424	1.3%	383	1.2%	609	1.8%
Scar	1,030	3.1%	943	2.9%	1,069	3.2%
Infiltrate	3,686	11.1%	3,600	11.2%	3,906	11.7%
Foreign Body	170	0.5%	133	0.4%	178	0.5%
Other	1,825	5.5%	2,033	6.3%	2,503	7.5%
Descemet's membrane	293	0.9%	338	1.0%	321	1.0%
Endothelium	6,374	19.1%	6,983	21.7%	6,600	19.8%
<b>Quality Issue</b>	<b>575</b>	<b>1.7%</b>	<b>493</b>	<b>1.5%</b>	<b>405</b>	<b>1.2%</b>
Storage	93	0.3%	108	0.3%	128	0.4%
Labeling	9	0.0%	21	0.1%	3	0.0%
Processing	403	1.2%	303	0.9%	157	0.5%
Supply or Reagent	51	0.2%	37	0.1%	86	0.3%
Environmental Control	19	0.1%	24	0.1%	31	0.1%
<b>Other Reason prior to Tissue Release</b>	<b>3,656</b>	<b>11.0%</b>	<b>1,857</b>	<b>5.8%</b>	<b>1,542</b>	<b>4.6%</b>
<b>Total eyes/corneas intended for transplant but not released for transplant</b>	<b>33,310</b>		<b>32,225</b>		<b>33,258</b>	

\*Percentages read from this table should be read as "of the tissue not released for transplant"



<sup>2</sup> Some tissues had multiple contraindications.

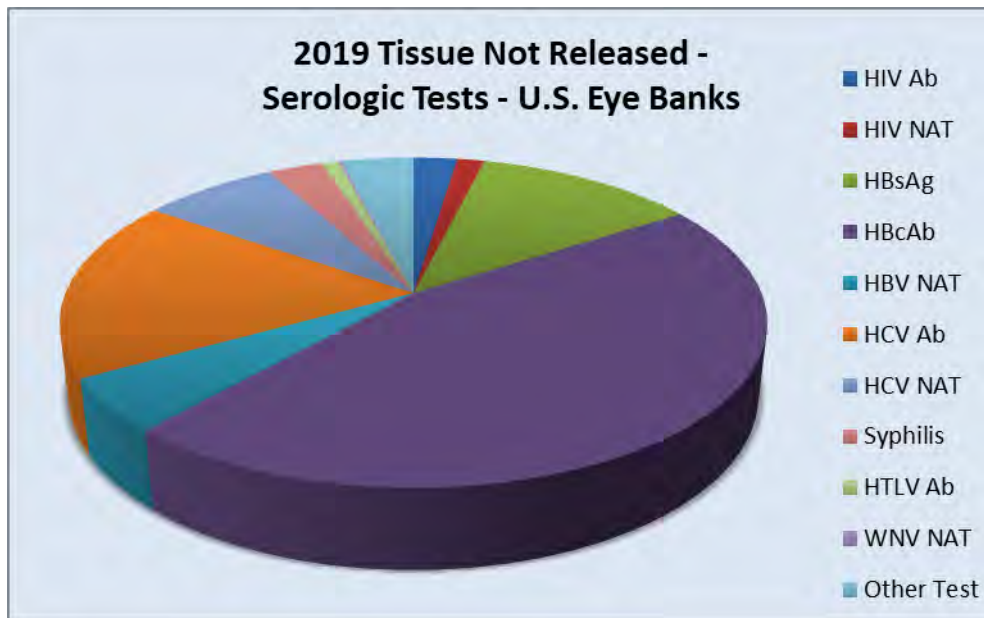
## 2019 Eye Banking Statistics Reported by U.S. Banks: Reasons Tissue Intended for Surgery Was Not Released



Reasons Corneas Recovered for Transplant Were Not Released - U.S. Eye Banks										
Reasons Not Released	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
<b>Serology Tests</b>	8,299	9,250	9,656	10,161	9,903	10,523	9,845	10,067	11,183	
<b>Testing Issue</b>	246	307	375	423	368	632	385	319	323	
<b>Med. Rec./Autopsy Finding</b>	6,756	6,701	7,138	7,313	7,754	7,578	7,614	6,599	6,650	
<b>Med Soc Hx Finding</b>	1,694	2,158	2,200	2,331	2,745	2,803	3,067	3,083	2,992	
<b>Body Exam</b>	205	273	189	235	266	280	325	292	374	
<b>Tissue Suitability</b>	11,168	12,360	12,384	14,463	15,341	14,511	13,994	14,631	15,319	
<b>Quality Issue</b>	476	378	416	434	486	477	575	493	405	
<b>Other Reason</b>	542	2,296	2,294	2,065	1,708	2,194	3,656	1,857	1,542	

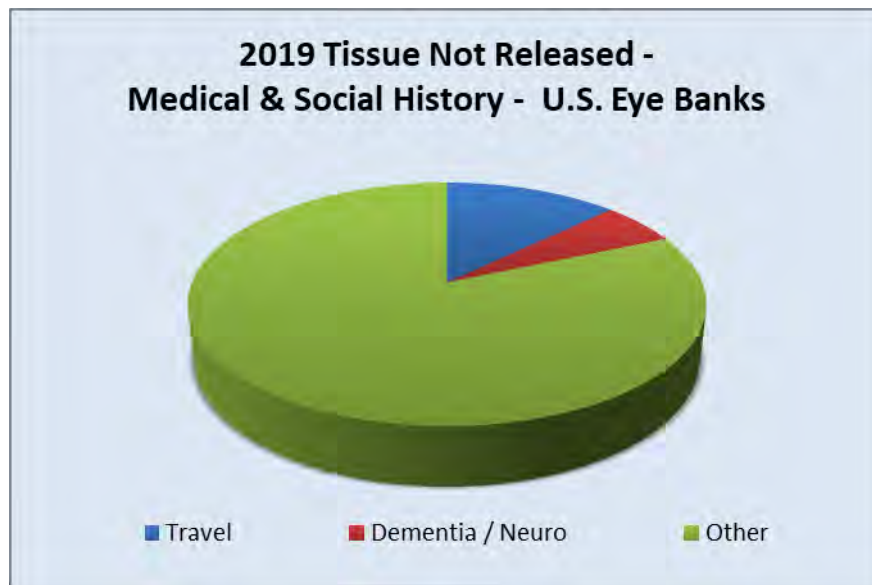
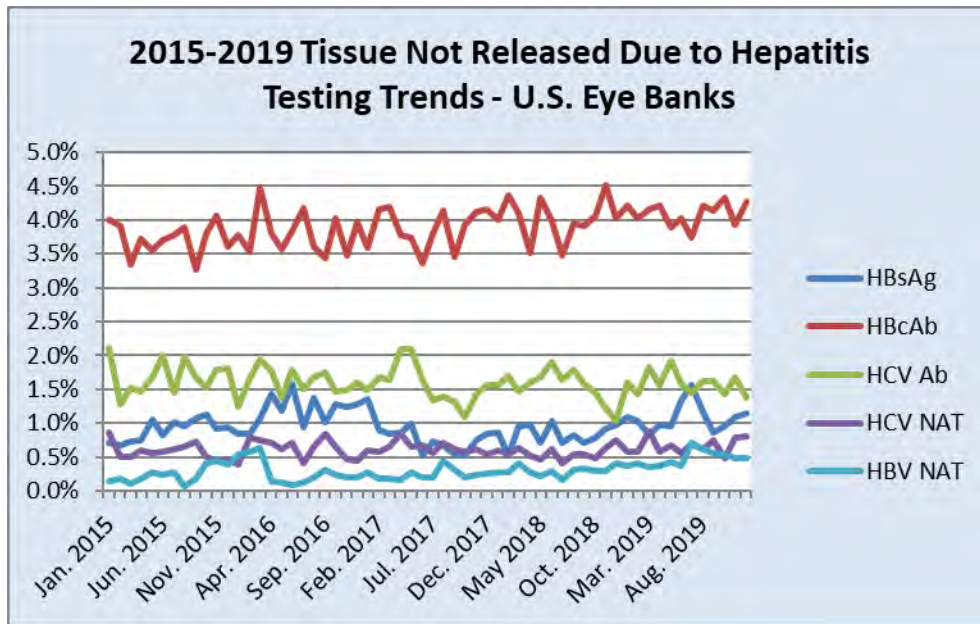


## 2019 Eye Banking Statistics Reported by U.S. Banks: Reasons Tissue Intended for Surgery Was Not Released



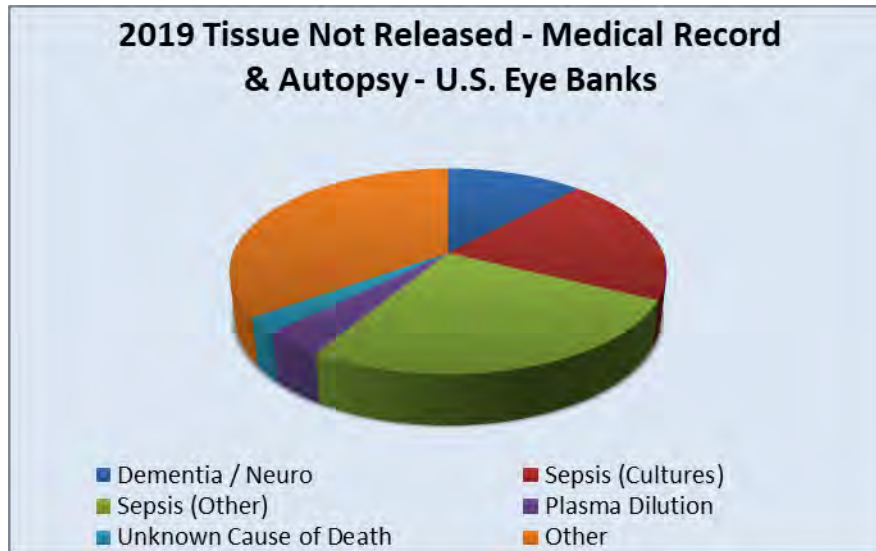
Corneas Not Released for Transplant (Serologic Testing) - U.S. Eye Banks										
Not Released - Serology	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trend
<b>HIV</b>	400	258	253	255	300	283	310	370	432	
HIV I/II Ab	164	173	169	185	220	185	216	274	265	
HIV NAT	236	85	84	70	80	98	94	96	167	
<b>HBV</b>	4,261	5,268	5,425	6,366	5,810	6,565	6,075	6,346	7,047	
HBsAg	723	876	786	1,130	1,070	1,457	986	1,028	1,344	
HBcAb	3,538	4,392	4,639	4,889	4,453	4,755	4,789	4,956	5,115	
HBV NAT	0	0	0	347	287	353	300	362	588	
<b>HCV</b>	2,637	2,623	2,791	2,598	2,725	2,762	2,719	2,596	2,812	
HCV Ab	1,925	1,957	2,029	1,889	2,025	1,996	1,936	1,911	1,986	
HCV NAT	712	666	762	709	700	766	783	685	826	
<b>Syphilis</b>	347	348	397	390	358	468	357	383	331	
<b>HTLV</b>	313	215	237	206	234	143	80	109	103	
<b>WNV</b>	0	0	0	4	10	3	22	8	20	
<b>Other</b>	341	538	553	342	466	299	282	255	438	

## 2019 Eye Banking Statistics Reported by U.S. Banks: Reasons Tissue Intended for Surgery Was Not Released



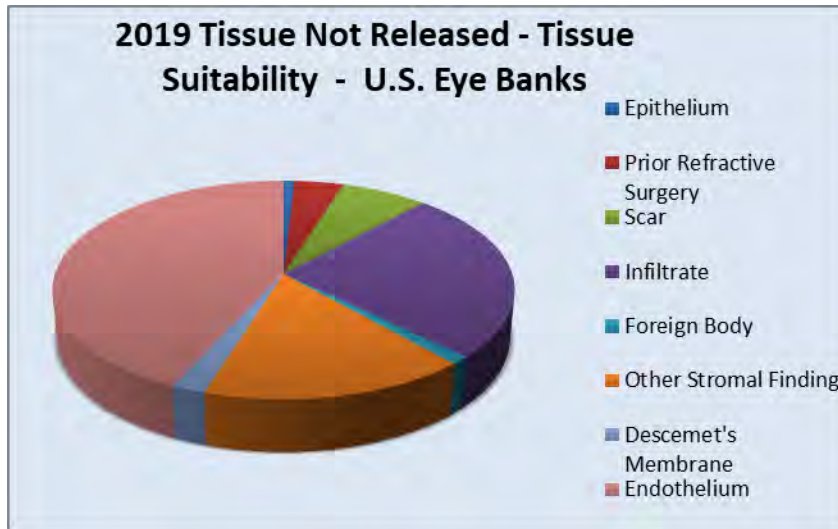
Corneas Not Released for Transplant (Med Soc Hx) - U.S. Eye Banks										
Not Released - Med Soc	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Travel	257	285	338	379	467	418	435	507	383	
Dementia/Neuro	146	174	198	139	180	216	256	312	171	
Other	1,291	1,699	1,664	1,813	2,098	2,169	2,376	2,264	2,438	

## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Reasons Tissues Were Not Released

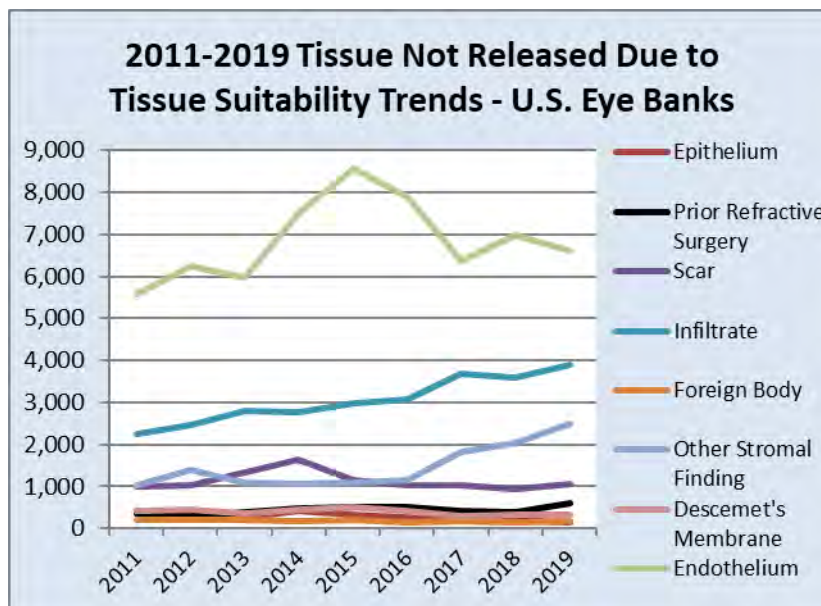


Corneas Not Released for Transplant (Medical Records) - U.S. Eye Banks										
Not Released - Med Rec / Autopsy	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Dementia/Neuro	491	542	660	733	827	778	723	732	791	
Sepsis (Cultures)	925	880	958	1,067	1,078	1,249	1,355	1,337	1,352	
Sepsis (Other)	2,356	2,511	2,628	2,443	2,443	2,262	1,949	1,853	1,762	
Plasma Dilution	422	353	447	445	381	346	407	315	261	
Unknown COD	507	416	485	388	326	192	179	132	165	
Other	2,055	1,999	1,960	2,237	2,699	2,751	3,001	2,230	2,319	

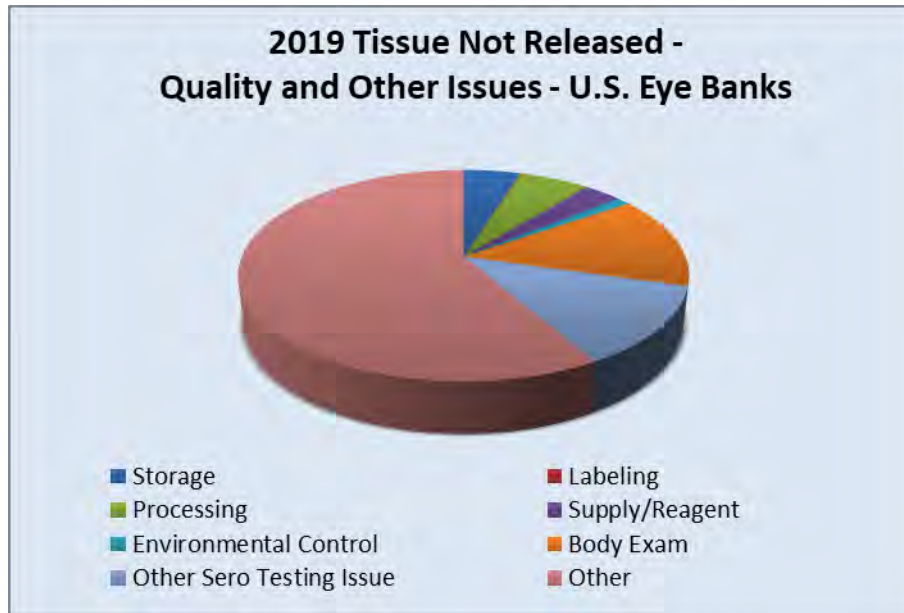
## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Tissue Suitability Reasons Tissues Were Not Released



Corneas Not Released for Transplant (Tissue Suitability) - U.S. Eye Banks										
Not Released - Tissue Suitability	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Epithelium	368	288	279	403	313	272	192	218	133	
Prior Refractive Surgery	345	298	390	473	512	508	424	383	609	
Scar	989	1,036	1,329	1,628	1,151	1,040	1,030	943	1,069	
Infiltrate	2,246	2,455	2,800	2,755	2,983	3,076	3,686	3,600	3,906	
Foreign Body	218	200	188	187	210	135	170	133	178	
Other Stromal Finding	1,034	1,404	1,095	1,068	1,098	1,162	1,825	2,033	2,503	
Descemet's Membrane	403	438	346	455	520	425	293	338	321	
Endothelium	5,565	6,241	5,957	7,494	8,554	7,893	6,374	6,983	6,600	



## 2019 Eye Banking Statistics Reported by U.S. Banks: Quality Issues for Tissue Not Released

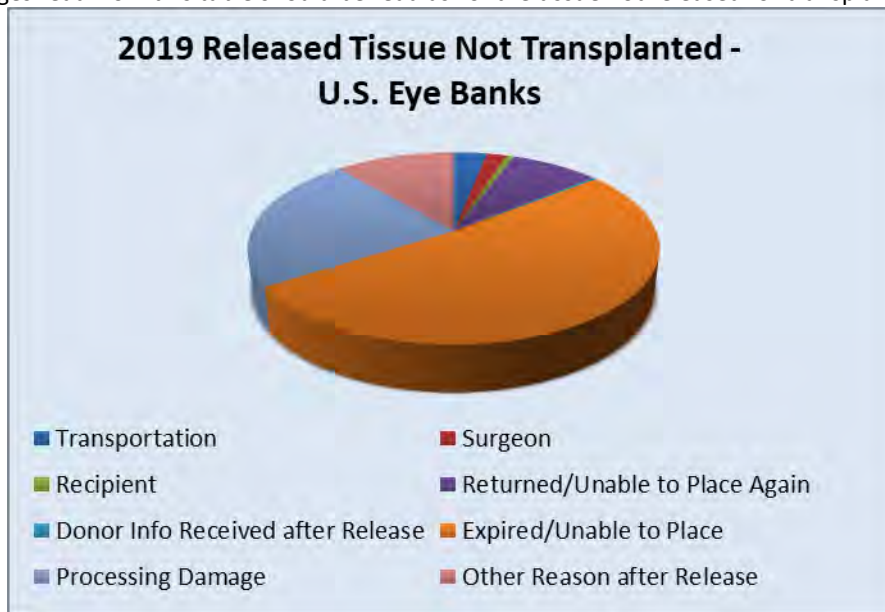


Corneas Not Released for Transplant (Quality) - U.S. Eye Banks										
Not Released - Quality Issues / Other	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Storage Issue	173	123	101	136	135	131	93	108	128	
Labeling Issue	44	14	14	11	9	16	9	21	3	
Processing Issue (not released)	148	181	225	232	252	251	403	303	157	
Supply / Reagent Issue	84	40	47	24	58	57	51	37	86	
Environmental Control Issue	27	20	29	31	32	22	19	24	31	
Body Exam	205	273	189	235	266	280	325	292	374	
Other Sero Testing Issue	246	307	375	423	368	632	385	319	323	
Other Issue	542	2,296	2,294	2,065	1,708	2,194	3,656	1,857	1,542	

## 2019 Eye Banking Statistics Reported by U.S. Banks: Reasons Released Tissues Were Not Transplanted

Reasons Released Tissues Were Not Transplanted	2017		2018		2019	
	Count	Percentage	Count	Percentage	Count	Percentage
Transportation Issue	147	2.4%	175	3.1%	192	3.2%
Surgeon Issue	111	1.8%	115	2.1%	116	1.9%
Recipient Issue	52	0.9%	36	0.6%	39	0.7%
Returned and Unable to Place Again	453	7.4%	467	8.4%	516	8.6%
Donor Information Not Available at the Time of Tissue Release	21	0.3%	14	0.3%	17	0.3%
Expired or Unable to Place Tissue	2,679	43.9%	2,473	44.5%	3,176	53.1%
Tissue Damaged During Processing	1,113	18.2%	1,454	26.2%	1,414	23.6%
Other Reason After Release of Tissue	2,007	32.9%	977	17.6%	686	11.5%
<b>Total eyes/corneas released for transplant but not used for transplant</b>	<b>6,109</b>		<b>5,556</b>		<b>5,984</b>	

\*Percentages read from this table should be read as "of the tissue not released for transplant"



Corneas Released but Not Transplanted - U.S. Eye Banks										
Released but Not Transplanted	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Transport Issue	127	116	109	169	226	139	147	175	192	
Surgeon Issue	199	146	162	150	140	103	108	115	116	
Recipient Issue	54	37	38	51	35	41	52	36	39	
Returned, Unable to Place Again	299	301	267	414	511	475	453	467	516	
Donor Info Received After Release	39	12	54	26	50	28	21	14	17	
Expired, Unable to Place	3,137	3,798	3,428	4,265	3,958	4,176	2,679	2,473	3,176	
Processing Damage After Release	283	440	501	596	764	1,030	1,113	1,454	1,414	
Other Reason After Release	393	270	714	1,063	1,359	1,511	2,007	977	686	

## 2019 Eye Banking Statistics Reported by U.S. Banks: Outcomes of Tissue Recovered for Transplant

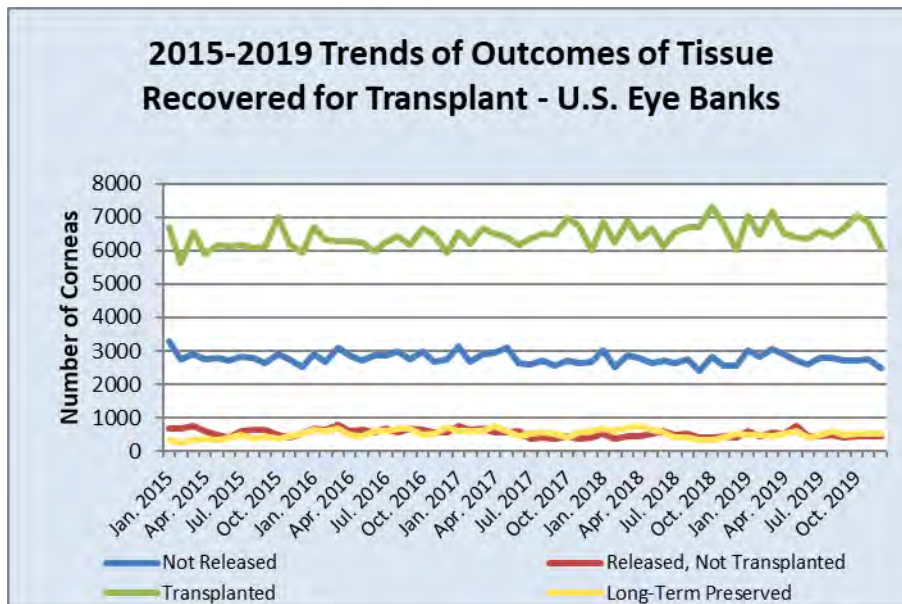
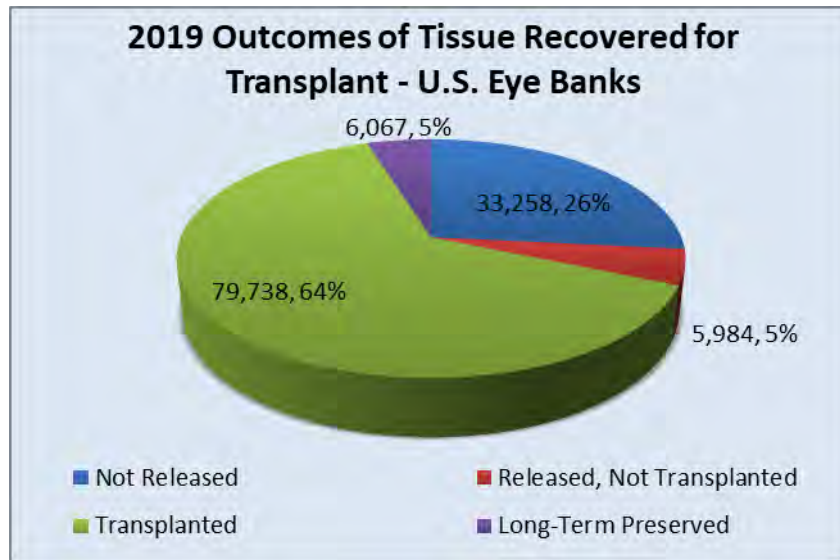
<b>Donations</b>	<b>2018</b>	<b>2019</b>	<b>% Change</b>
Eye Banks Reported	57	57	0.0%
Total Whole Globes and Corneas Donated	133,576	136,130	1.9%
Total Number of Donors	68,102	68,759	1.0%
<b>Distribution</b>	<b>2018</b>	<b>2019</b>	<b>% Change</b>
Intermediate-Term Preserved Corneas	79,207	79,534	0.4%
Sclera	2,959	5,999	102.7%
Long-Term Preserved Corneas	13,521	8,614	(-36.3%)
Research	12,495	13,743	10.0%
Training	10,666	9,487	(-11.1%)

### Outcomes of Corneas Recovered for Transplant Use - U.S. Eye Banks

Month	Corneas Recovered for Transplant	Corneas Segmented	Corneal Segments Produced	Not Released		Released but Not Transplanted		Whole Corneas and Segments Transplanted		Preserved Long-Term	
Jan. 2019	11,126	90	102	3,002	27.0%	607	5.5%	7,040	63.2%	489	4.4%
Feb. 2019	10,204	8	16	2,820	27.6%	447	4.4%	6,460	63.3%	485	4.7%
Mar. 2019	11,205	12	24	3,043	27.2%	541	4.8%	7,178	64.0%	455	4.1%
Apr. 2019	10,414	14	28	2,887	27.7%	508	4.9%	6,528	62.6%	505	4.8%
May 2019	10,445	12	24	2,711	26.0%	734	7.0%	6,398	61.2%	614	5.9%
Jun. 2019	9,820	15	30	2,588	26.4%	454	4.6%	6,377	64.8%	416	4.2%
Jul. 2019	10,283	25	49	2,769	26.9%	457	4.4%	6,597	64.0%	484	4.7%
Aug. 2019	10,302	14	28	2,804	27.2%	481	4.7%	6,444	62.5%	587	5.7%
Sep. 2019	10,270	17	37	2,708	26.4%	422	4.1%	6,673	64.8%	487	4.7%
Oct. 2019	10,719	23	45	2,702	25.2%	457	4.3%	7,070	65.8%	512	4.8%
Nov. 2019	10,550	11	22	2,753	26.1%	433	4.1%	6,868	65.0%	507	4.8%
Dec. 2019	9,505	28	68	2,471	26.0%	443	4.7%	6,105	64.0%	526	5.5%
<b>2015 Total</b>	116,071	2	4	32,958	28.4%	6,681	5.8%	72,013	62.0%	4,420	3.8%
<b>2016 Total</b>	119,687	1	2	33,577	28.1%	6,806	5.7%	74,624	62.3%	4,681	3.9%
<b>2017 Total</b>	124,649	0	0	34,126	27.4%	7,529	6.0%	75,926	60.9%	7,068	5.7%
<b>2018 Total</b>	123,222	27	56	32,225	26.2%	5,556	4.5%	79,207	64.3%	6,263	5.1%
<b>2019 Total</b>	124,843	269	473	33,258	26.6%	5,984	4.8%	79,738	63.8%	6,067	4.9%
<b>2019 Avg.</b>	10,404	22	39	2,772	N/A	499	N/A	6,645	N/A	506	N/A
<b>Std. Dev.</b>	478	22.13	24.4	160	0.8%	91	0.8%	328	1.3%	53	0.6%

\*Percentages read from this table should be read as "of the tissue recovered with transplant intent"

## 2019 Eye Banking Statistics Reported by U.S. Banks: Outcomes of Tissue Recovered for Transplant

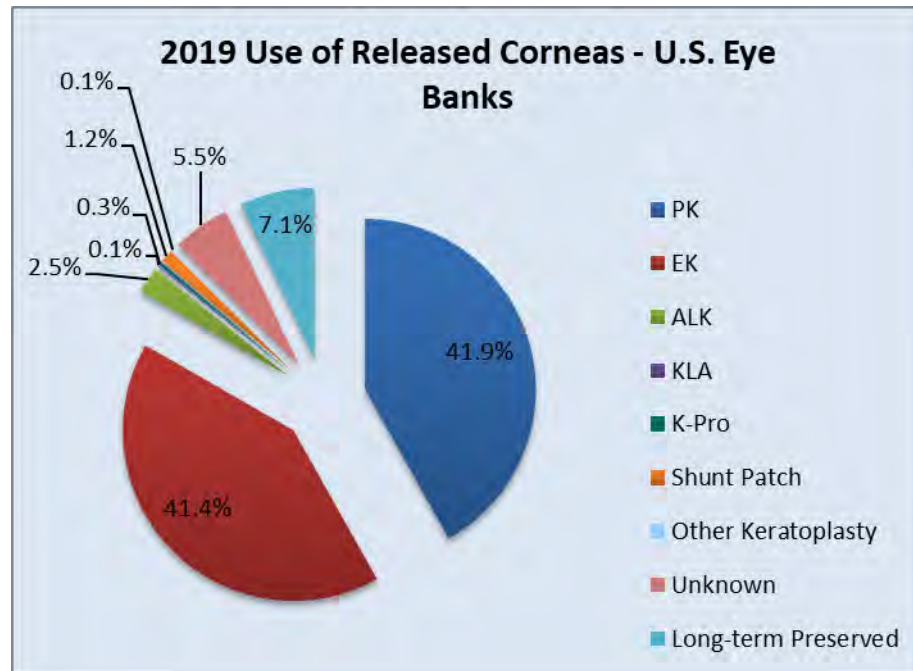


General Outcomes of Corneas Recovered for Transplant Use - U.S. Eye Banks										
Outcome	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trend
Not Released	29,407	30,185	32,456	32,958	33,577	34,126	33,310	32,225	33,258	
Released, Not	4,536	4,908	5,182	6,681	6,806	7,529	6,109	5,556	5,984	
Transplanted	67,520	68,684	68,442	72,013	74,624	75,926	77,579	79,207	79,738	
Long-Term Preserved	3,017	2,454	4,294	4,420	4,681	7,068	6,718	6,263	6,067	

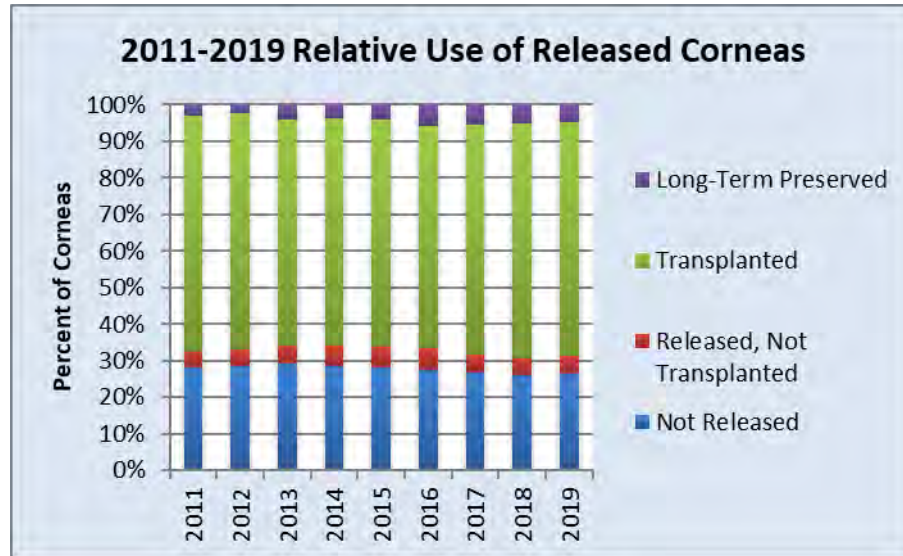


## 2019 Eye Banking Statistics Reported by U.S. Banks: Use of Donated Tissues

Use of Donated Tissue	2015	2016	2017	2018	2019
Corneal Grafts Total	79,304	82,994	84,297	85,441	85,601
Penetrating Keratoplasty	39,554	38,413	38,025	36,028	35,919
Anterior Lamellar Keratoplasty	2,201	2,386	2,541	2,355	2,146
Endothelial Keratoplasty	30,710	32,221	33,397	35,071	35,555
Keratolimbic Allograft	107	97	104	87	110
Keratoprosthesis (K-Pro)	364	313	344	243	267
Glaucoma Shunt Patch or other non-keratoplasty use	527	917	1,368	1,058	1,018
Other keratoplasty (experimental surgery)	19	65	232	64	44
Unknown or Unspecified	1,142	1,514	1,568	4,301	4,679
Sclera	3,225	3,380	3,253	2,959	5,999
Long-Term Preserved Corneas	11,672	18,133	12,543	13,521	8,614
Keratoplasty	737	1,335	197	298	126
Glaucoma Shunt Patching	10,843	16,683	12,345	13,066	8,420
Other Surgical Uses	92	115	1	157	68
Research	16,924	17,023	13,859	12,495	13,743
Training	10,003	9,916	10,539	10,666	9,487

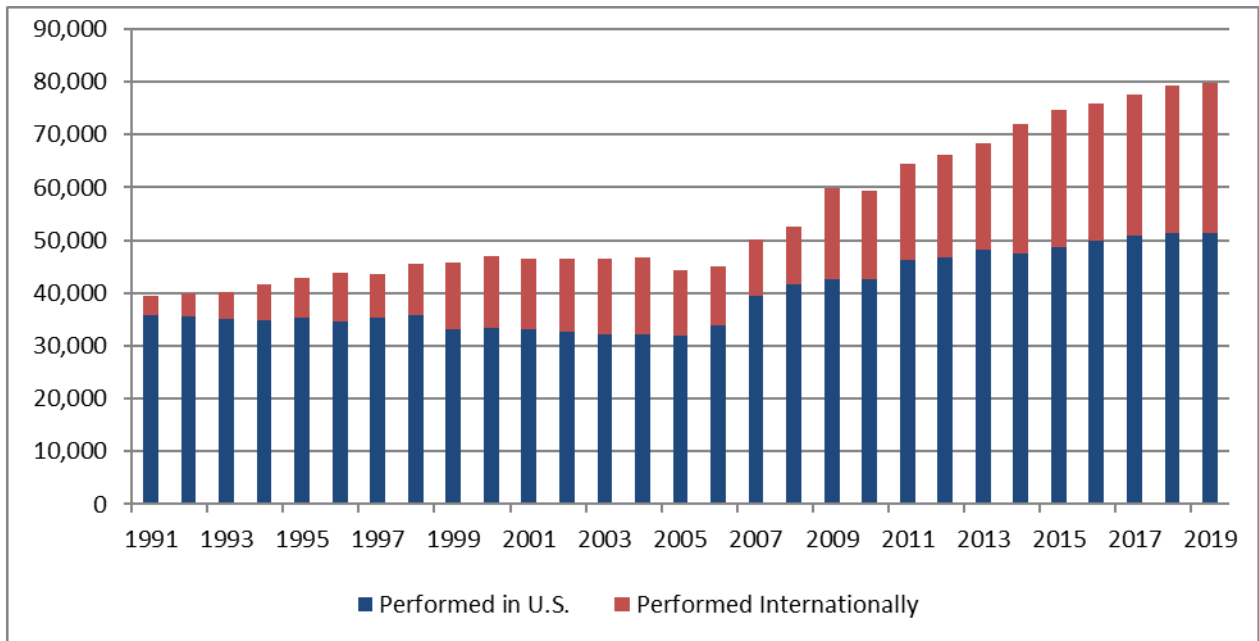


## 2019 Eye Banking Statistics Reported by U.S. Banks: Use of Donated Tissues



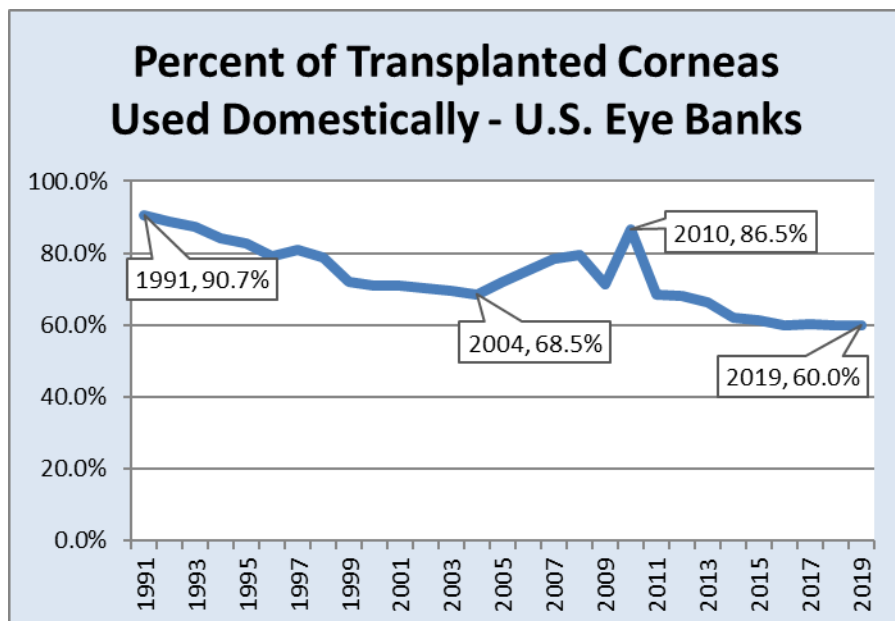
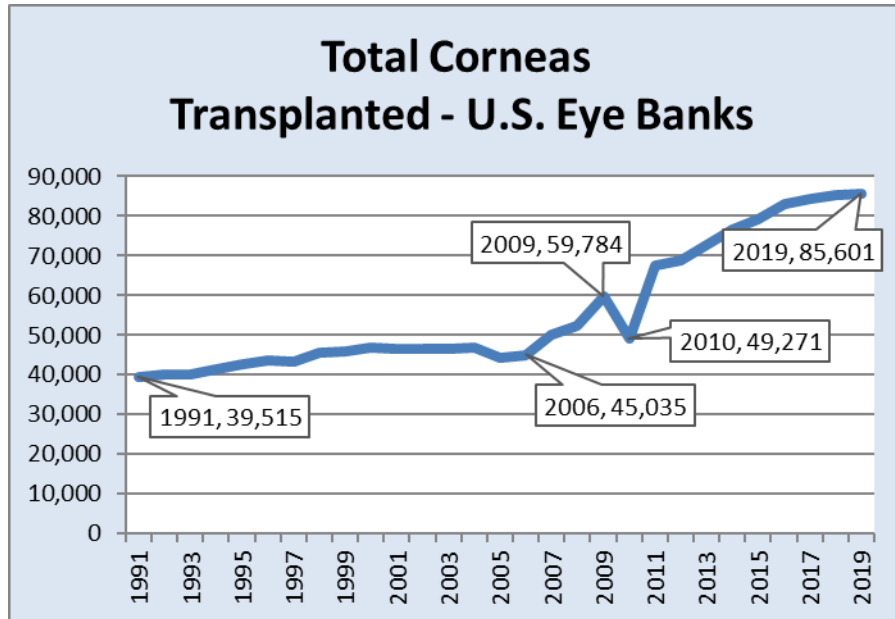
Surgical Outcomes of Corneas Recovered for Transplant Use - U.S. Eye Banks										
Surgery Type	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trend
PK	36,144	36,716	36,998	38,919	39,554	38,413	38,025	36,028	35,919	
EK	23,287	25,025	27,298	28,961	30,710	32,221	33,397	35,071	35,555	
ALK	1,778	1,855	2,009	1,953	2,201	2,386	2,541	2,355	2,146	
KLA	95	97	110	88	107	97	104	87	110	
K-Pro	358	263	255	294	364	313	344	243	267	
Shunt Patch	604	676	687	755	527	917	1,368	1,058	1,018	
Other Keratoplasty	14	44	17	17	19	65	232	64	44	
Unknown	2,223	1,554	1,068	1,026	1,142	1,514	1,568	4,301	4,679	
Long-term Preserved	3,017	2,454	4,294	4,420	4,681	7,068	6,718	6,263	6,067	

## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Annual Number of Corneal Transplants Supplied by U.S. Banks



Year	Total Provided by U.S.	Performed in U.S.	Performed Internationally
1991	39,515	35,831	3,684
1992	39,973	35,525	4,448
1993	40,215	35,173	5,042
1994	41,539	34,842	6,697
1995	42,740	35,300	7,440
1996	43,711	34,668	9,043
1997	43,492	35,209	8,283
1998	45,579	35,861	9,718
1999	45,765	33,020	12,745
2000	46,949	33,260	13,689
2001	46,532	33,035	13,497
2002	46,440	32,559	13,881
2003	46,436	32,240	14,196
2004	46,841	32,106	14,735
2005	44,329	31,952	12,377
2006	45,035	33,962	11,073
2007	50,122	39,391	10,731
2008	52,487	41,652	10,835
2009	59,784	42,606	17,178
2010	59,271	42,642	16,629
2011	67,590	46,196	18,307
2012	68,681	46,684	19,546
2013	72,736	48,229	20,213
2014	76,431	47,530	24,483
2015	79,304	48,792	25,832
2016	82,994	49,869	26,057
2017	84,297	50,934	26,645
2018	85,441	51,294	27,913
2019	85,601	51,336	28,402

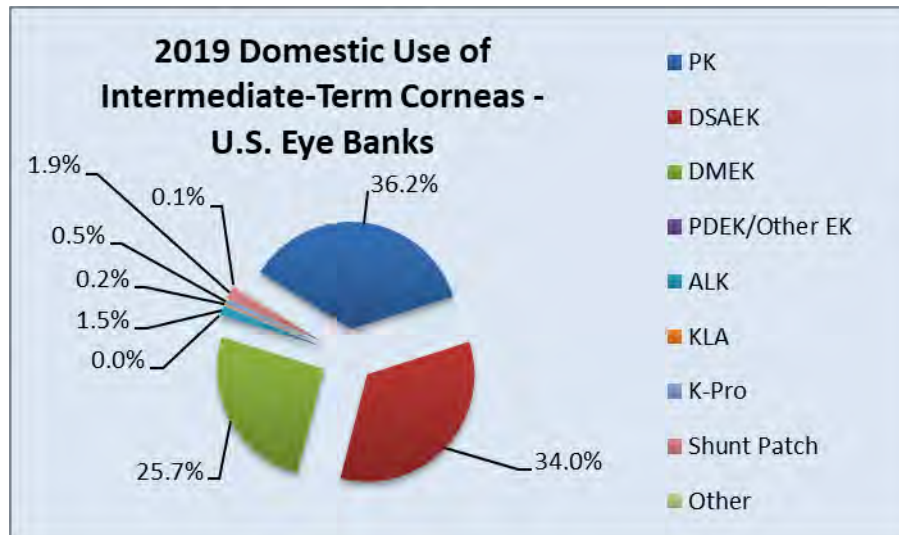
## 2019 Eye Banking Statistics Reported by U.S. Banks: Transplant Activity



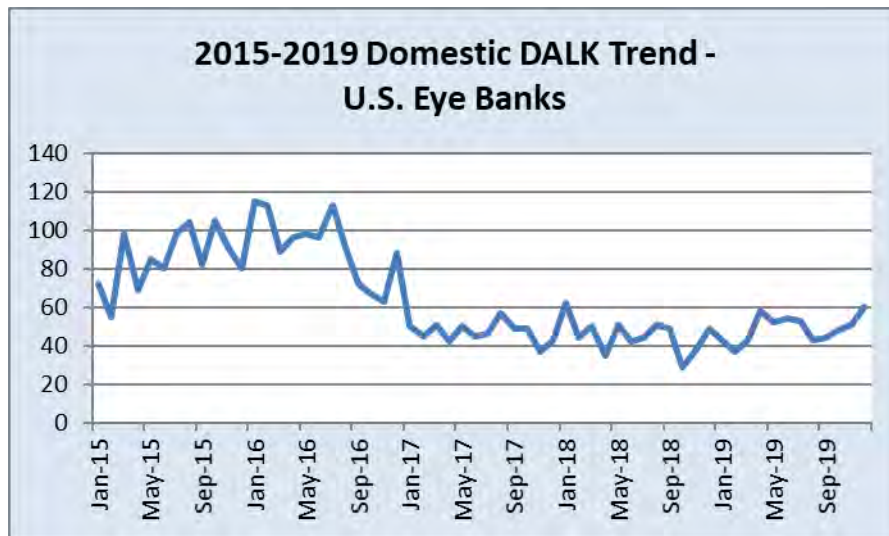
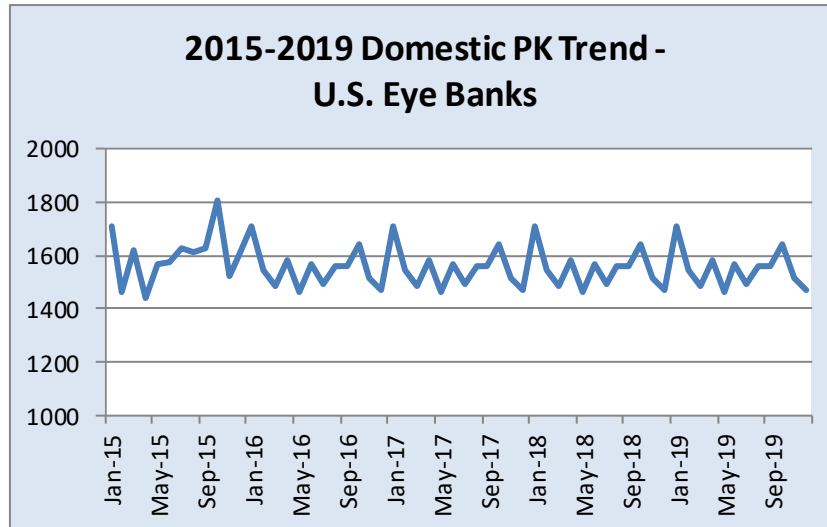
\*In 2010, the first instance of tissue recovered by "recovery-only" entities occurred. The data system at the time did not collect this information. A new data system was introduced in 2011.

## 2019 Eye Banking Statistics Reported by U.S. Banks: Domestic Surgery Use of Intermediate-Term Preserved Tissue

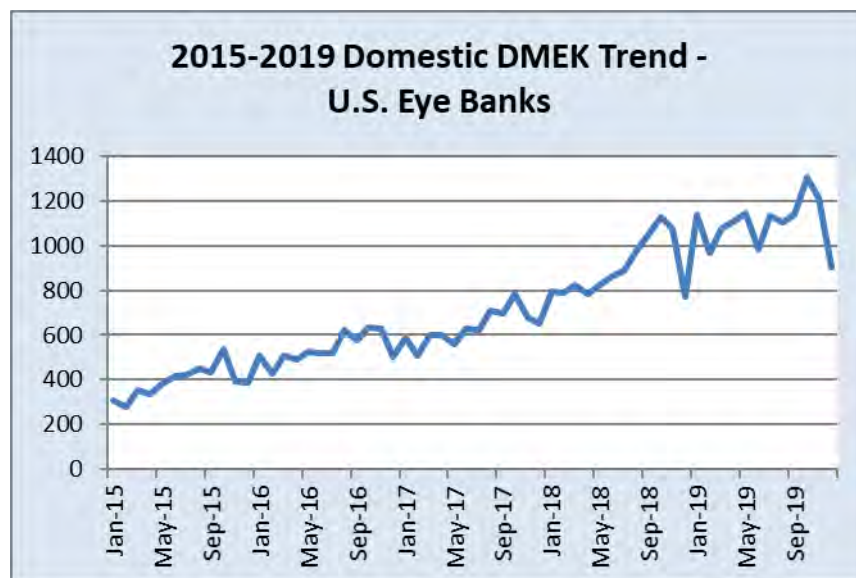
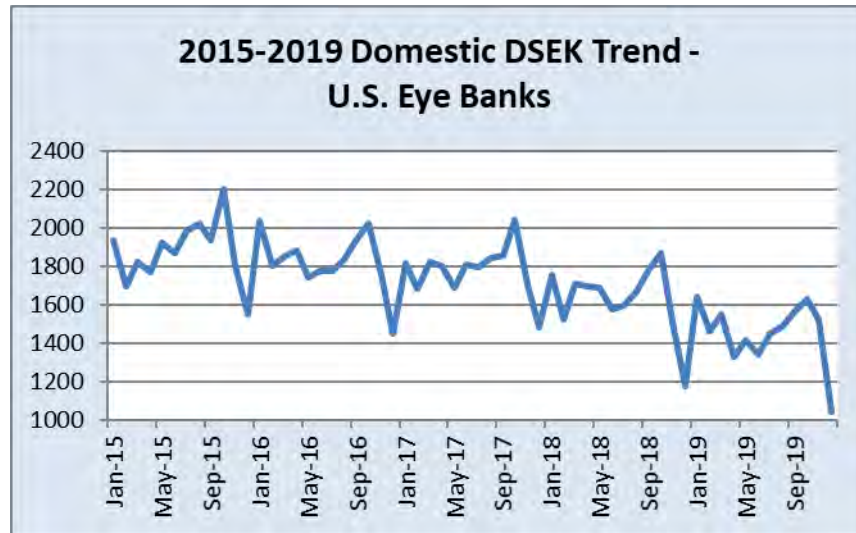
	2018	2019
Intermediate-term preserved corneas processed into corneal segments	27	269
Number of intermediate-term preserved corneas segments produced	56	473
Intermediate-term preserved corneas, corneal segments or whole eyes transplanted in the U.S for:	<b>51,294</b>	<b>51,336</b>
PK	<b>17,347</b>	<b>17,409</b>
EK	<b>30,336</b>	<b>30,650</b>
DSEK, DSAEK, DLEK	19,526	17,428
DMEK or DMAEK	10,773	13,215
PDEK	26	6
Other EK	11	1
ALK	<b>884</b>	<b>745</b>
DALK (Deep Anterior Lamellar Keratoplasty)	544	586
SALK (Superficial Anterior Lamellar Keratoplasty)	19	10
Other ALK (e.g. peripheral, eccentric, etc.)	321	149
KLA	68	95
Keratoprosthesis (K-Pro)	225	251
Glaucoma shunt patch or other non-keratoplasty use	979	971
Other Keratoplasty (e.g. experimental surgery type)	62	40
Unknown or Unspecified	1,393	1,175



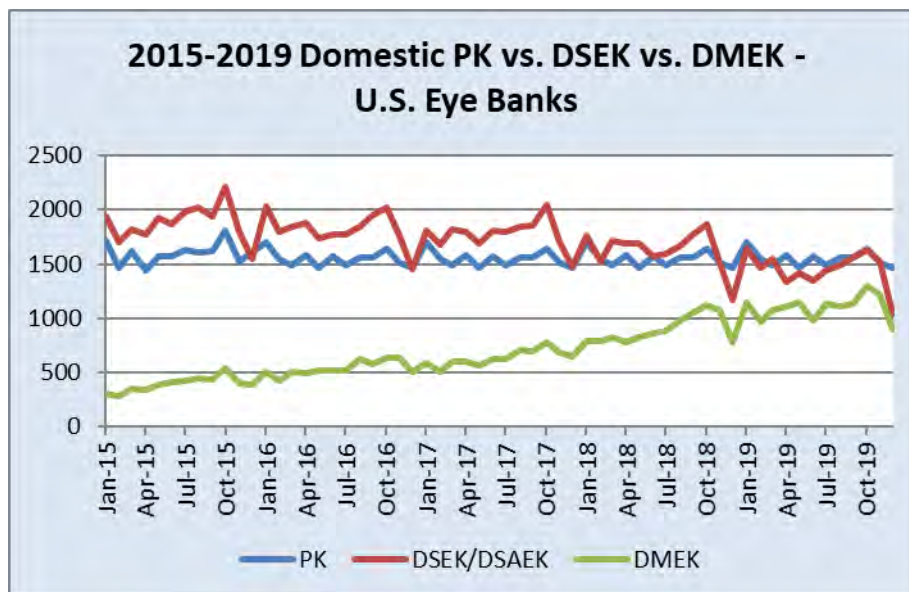
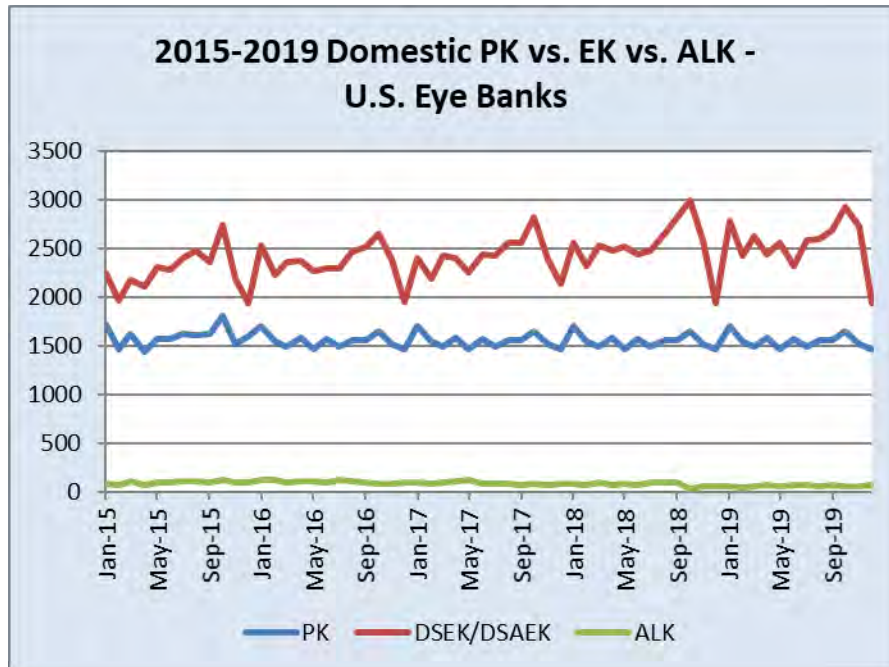
## 2019 Eye Banking Statistics Reported by U.S. Banks: Domestic Surgery Use of Intermediate-Term Preserved Tissue



## 2019 Eye Banking Statistics Reported by U.S. Banks: Domestic Surgery Use of Intermediate-Term Preserved Tissue



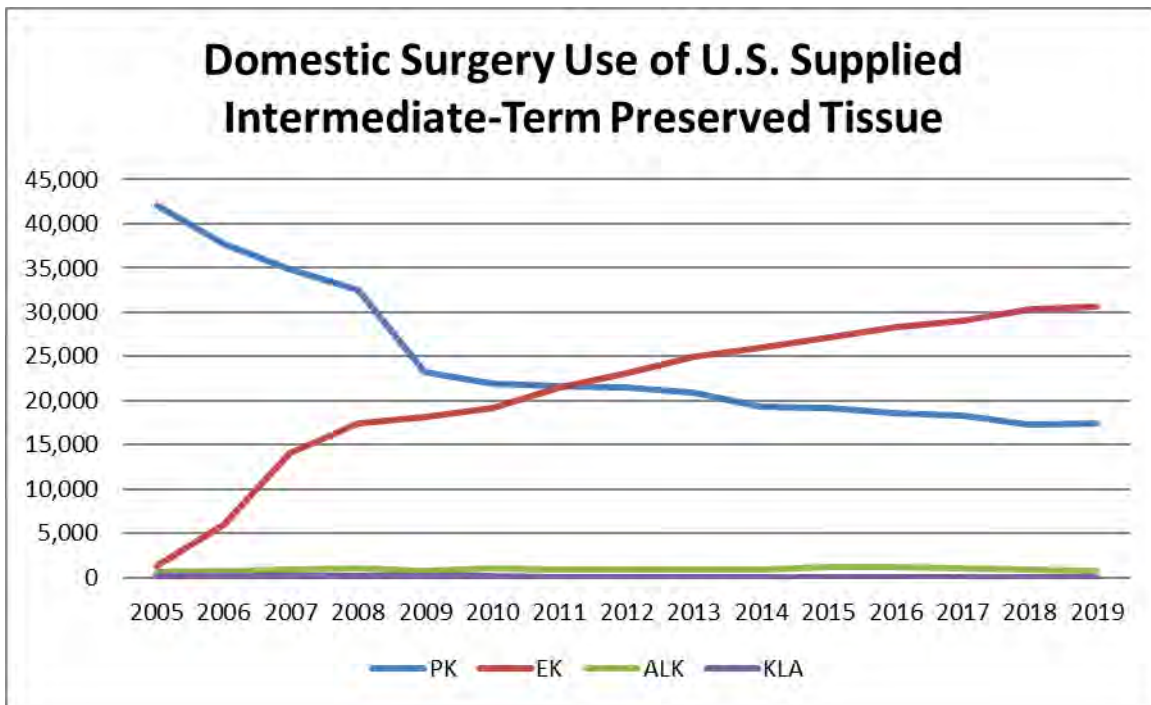
## 2019 Eye Banking Statistics Reported by U.S. Banks: Domestic Surgery Use of Intermediate-Term Preserved Tissue





**Eye Banking Statistics Reported by U.S. Banks:  
Domestic Use of Intermediate-Term Preserved Tissues  
Annual Comparison 2011 - 2019**

<b>Domestic Surgery Use</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Penetrating Keratoplasty	21,620	21,422	20,954	19,294	19,160	18,579	18,346	17,347	17,409
Endothelial Keratoplasty	21,555	23,049	24,987	25,965	27,208	28,327	28,993	30,336	30,650
Anterior Lamellar Keratoplasty	932	883	951	914	1,115	1,232	1,027	884	745
Keratolimbal Allograft	69	80	91	80	97	82	93	68	95
K-Pro	332	236	223	260	323	279	304	225	251



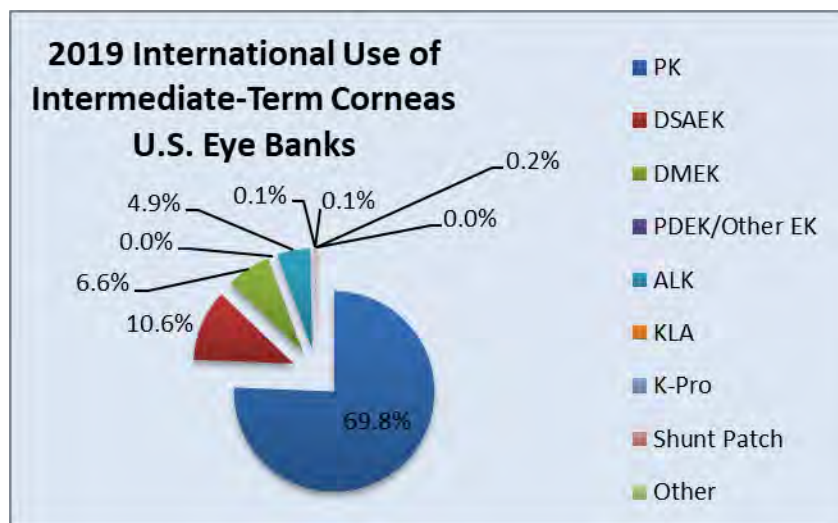
## 2019 Eye Banking Statistics Reported by U.S. Banks: Domestic Surgery Use of Intermediate-Term Preserved Tissue

Surgery Type (Domestically Distributed Corneas) - U.S. Eye Banks												
Month	PK	EK (DSEK)	EK (DMEK)	EK (Other)	ALK (DALK)	ALK (SALK)	ALK (Other)	KLA	K-Pro	Shunt Patch	Other	Unknown
Jan. 2019	37.7%	36.3%	25.2%	0.0%	0.9%	0.0%	0.4%	0.2%	0.5%	2.6%	0.1%	2.1%
Feb. 2019	38.4%	36.5%	24.1%	0.0%	0.9%	0.0%	0.2%	0.2%	0.6%	1.9%	0.1%	2.2%
Mar. 2019	33.4%	34.8%	24.2%	0.0%	1.0%	0.0%	0.1%	0.1%	0.5%	2.1%	0.4%	2.5%
Apr. 2019	37.4%	31.3%	26.2%	0.0%	1.4%	0.0%	0.4%	0.0%	0.5%	3.4%	0.1%	2.5%
May 2019	33.4%	32.4%	26.2%	0.0%	1.2%	0.0%	0.2%	0.3%	0.5%	3.3%	0.0%	3.2%
Jun. 2019	38.5%	33.0%	24.2%	0.0%	1.3%	0.0%	0.4%	0.1%	0.4%	1.8%	0.1%	3.9%
Jul. 2019	34.3%	33.3%	26.1%	0.0%	1.2%	0.0%	0.3%	0.3%	0.5%	1.8%	0.0%	3.8%
Aug. 2019	36.5%	34.9%	25.9%	0.0%	1.0%	0.0%	0.4%	0.2%	0.6%	1.0%	0.0%	1.8%
Sep. 2019	34.9%	35.0%	25.5%	0.0%	1.0%	0.0%	0.6%	0.1%	0.2%	1.0%	0.0%	1.3%
Oct. 2019	34.5%	34.2%	27.3%	0.0%	1.0%	0.0%	0.2%	0.1%	0.4%	0.9%	0.0%	1.5%
Nov. 2019	34.5%	34.6%	27.6%	0.0%	1.2%	0.0%	0.2%	0.3%	0.6%	1.3%	0.0%	0.8%
Dec. 2019	42.5%	30.2%	26.1%	0.0%	1.7%	0.0%	0.2%	0.2%	0.5%	1.7%	0.0%	2.1%
<b>2015 Avg.</b>	39.3%	46.1%	9.6%	N/A	2.1%	0.1%	0.1%	0.2%	0.7%	0.9%	0.0%	0.9%
<b>2016 Avg.</b>	37.3%	43.9%	13.0%	N/A	2.2%	0.0%	0.2%	0.2%	0.6%	1.6%	0.1%	1.0%
<b>2017 Avg.</b>	36.5%	41.9%	15.0%	0.1%	1.1%	0.1%	0.8%	0.2%	0.6%	2.6%	0.4%	1.2%
<b>2018 Avg.</b>	36.2%	38.1%	21.0%	0.1%	1.1%	0.0%	0.6%	0.1%	0.4%	1.9%	0.1%	2.7%
<b>2019 Avg.</b>	36.2%	33.9%	25.7%	0.0%	1.1%	0.0%	0.3%	0.2%	0.5%	1.9%	0.1%	2.3%
<b>Std. Dev.</b>	2.7%	1.9%	1.1%	0.0%	0.2%	0.0%	0.1%	0.1%	0.1%	0.8%	0.1%	0.9%

\*Percentages read from this table should be read as "of the tissue distributed for transplant use domestically"

## 2019 Eye Banking Statistics Reported by U.S. Banks: International Surgery Use of Intermediate-Term Preserved Tissue

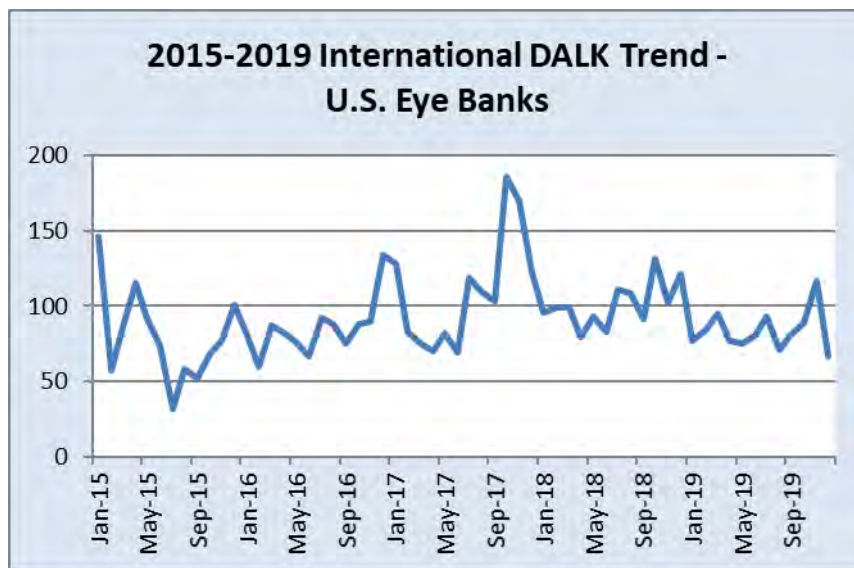
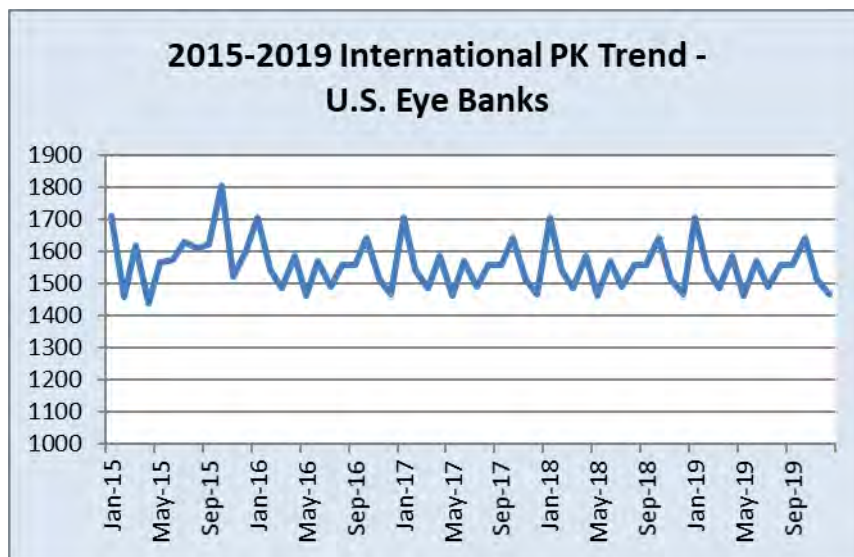
International Use of Intermediate-Term Corneas – U.S. Eye Banks		
	2018	2019
Intermediate-term preserved corneas, corneal segments or whole eyes transplanted internationally for:	<b>27,913</b>	<b>28,402</b>
PK	<b>18,681</b>	<b>18,510</b>
EK	<b>4,735</b>	<b>4,905</b>
DSEK, DSAEK, DLEK	2,971	3,017
DMEK or DMAEK	1,751	1,884
PDEK	0	0
Other EK	13	4
ALK	<b>1,471</b>	<b>1,401</b>
DALK (Deep Anterior Lamellar Keratoplasty)	1,213	1,006
SALK (Superficial Anterior Lamellar Keratoplasty)	33	53
Other ALK (e.g. peripheral, eccentric, etc.)	225	342
KLA	19	15
Keratoprosthesis (K-Pro)	18	16
Glaucoma shunt patch or other non-keratoplasty use	79	47
Other Keratoplasty (e.g. experimental surgery type)	2	4
Unknown or Unspecified	2,908	3,504
<b>Total intermediate-term preserved corneas, corneal segments, and whole eyes used for KERATOPLASY</b>	<b>78,149</b>	<b>78,720</b>
<b>Total intermediate-term preserved corneas, corneal segments, and whole eyes used for TRANSPLANT</b>	<b>79,178</b>	<b>79,534</b>



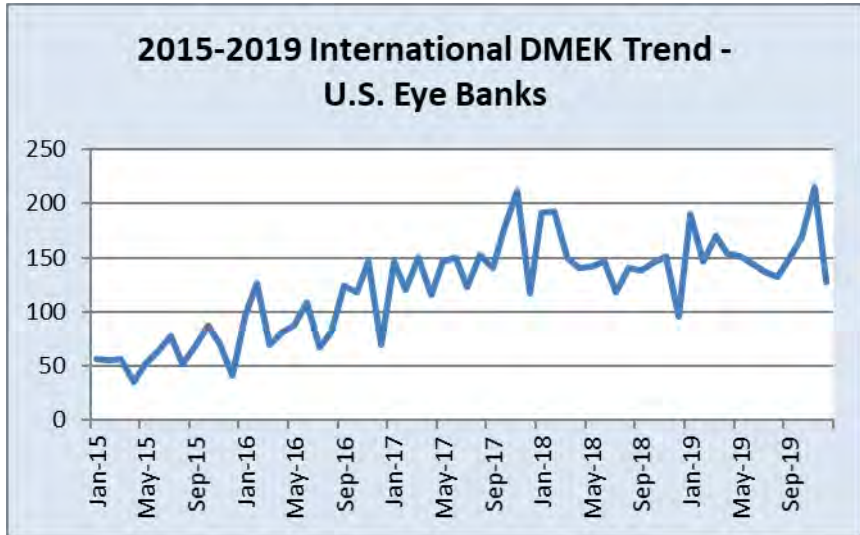
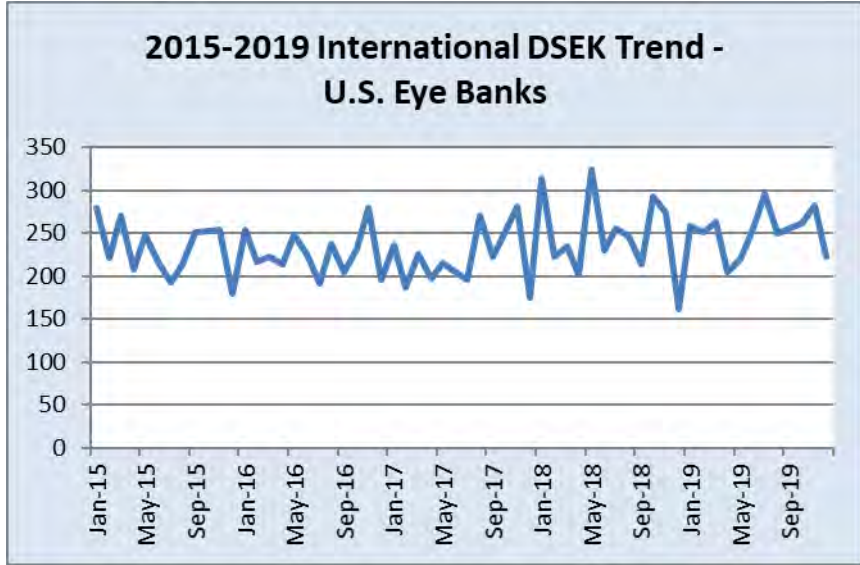
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## 2019 Eye Banking Statistics Reported by U.S. Banks: International Surgery Use of Intermediate-Term Preserved Tissue

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**2019 Eye Banking Statistics Reported by U.S. Banks:  
International Surgery Use of Intermediate-Term Preserved Tissue**



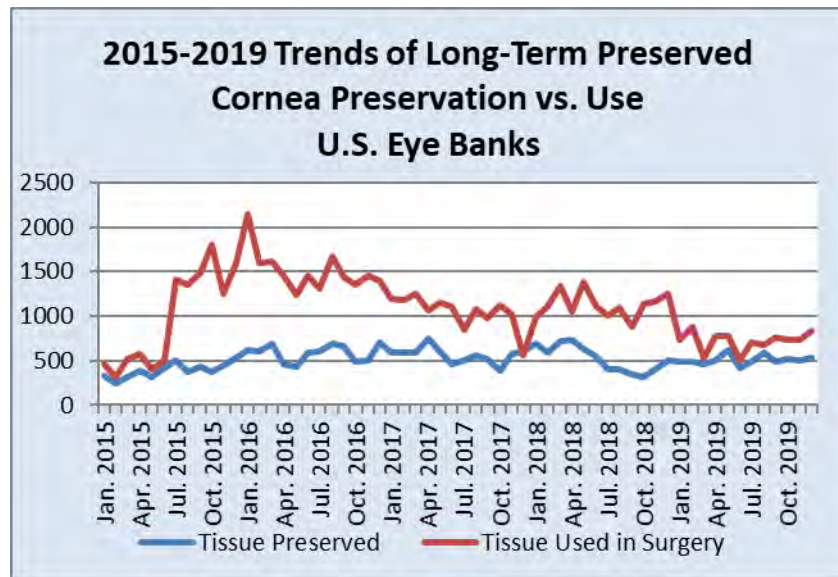
## 2019 Eye Banking Statistics Reported by U.S. Banks: International Surgery Use of Intermediate-Term Preserved Tissue

Surgery Type (Internationally Distributed Corneas) - U.S. Eye Banks												
Month	PK	EK (DSEK)	EK (DMEK)	EK (Other)	ALK (DALK)	ALK (SALK)	ALK (Other)	KLA	K-Pro	Shunt Patch	Other	Unknown
<b>Jan. 2019</b>	74.1%	10.3%	7.6%	0.0%	3.1%	0.1%	2.0%	0.0%	0.1%	0.5%	0.0%	6.9%
<b>Feb. 2019</b>	73.3%	10.3%	6.0%	0.0%	3.4%	0.1%	0.8%	0.1%	0.1%	0.1%	0.1%	7.4%
<b>Mar. 2019</b>	62.5%	9.6%	6.2%	0.0%	3.5%	0.1%	1.1%	0.1%	0.0%	0.2%	0.0%	10.2%
<b>Apr. 2019</b>	71.9%	9.0%	6.7%	0.0%	3.4%	0.2%	0.4%	0.0%	0.1%	0.1%	0.0%	11.6%
<b>May 2019</b>	86.3%	10.8%	7.4%	0.0%	3.7%	0.0%	0.4%	0.0%	0.0%	0.3%	0.0%	10.9%
<b>Jun. 2019</b>	61.4%	11.1%	6.2%	0.0%	3.5%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	13.4%
<b>Jul. 2019</b>	76.5%	13.1%	6.1%	0.1%	4.1%	0.0%	1.5%	0.0%	0.0%	0.4%	0.0%	14.4%
<b>Aug. 2019</b>	75.2%	11.5%	6.1%	0.0%	3.3%	0.0%	1.6%	0.1%	0.1%	0.1%	0.0%	12.4%
<b>Sep. 2019</b>	59.9%	11.5%	6.7%	0.1%	3.7%	0.4%	1.2%	0.0%	0.1%	0.0%	0.0%	15.6%
<b>Oct. 2019</b>	70.7%	11.3%	7.3%	0.0%	3.9%	0.5%	1.8%	0.0%	0.1%	0.0%	0.0%	13.8%
<b>Nov. 2019</b>	67.3%	11.4%	8.7%	0.0%	4.7%	0.4%	2.5%	0.0%	0.0%	0.0%	0.0%	9.8%
<b>Dec. 2019</b>	63.1%	8.4%	4.8%	0.0%	2.5%	0.3%	0.9%	0.0%	0.0%	0.0%	0.0%	21.5%
<b>2015 Avg.</b>	78.9%	1.0%	10.8%	N/A	3.7%	0.1%	0.4%	0.0%	0.2%	0.3%	0.0%	2.8%
<b>2016 Avg.</b>	76.1%	10.4%	4.5%	N/A	3.9%	0.1%	0.5%	0.1%	0.1%	0.4%	0.0%	3.9%
<b>2017 Avg.</b>	74.4%	10.0%	6.6%	0.0%	4.9%	0.1%	0.7%	0.0%	0.2%	0.2%	0.0%	3.5%
<b>2018 Avg.</b>	71.1%	10.6%	6.3%	0.0%	4.3%	0.1%	0.8%	0.1%	0.1%	0.3%	0.0%	10.4%
<b>2019 Avg.</b>	69.8%	10.6%	6.6%	0.0%	3.5%	0.2%	1.2%	0.1%	0.1%	0.2%	0.0%	12.3%
<b>Std. Dev.</b>	7.7%	1.3%	1.0%	0.0%	0.5%	0.2%	0.7%	0.0%	0.1%	0.2%	0.0%	3.9%

\*Percentages read from this table should be read as "of the tissue distributed for transplant use internationally"

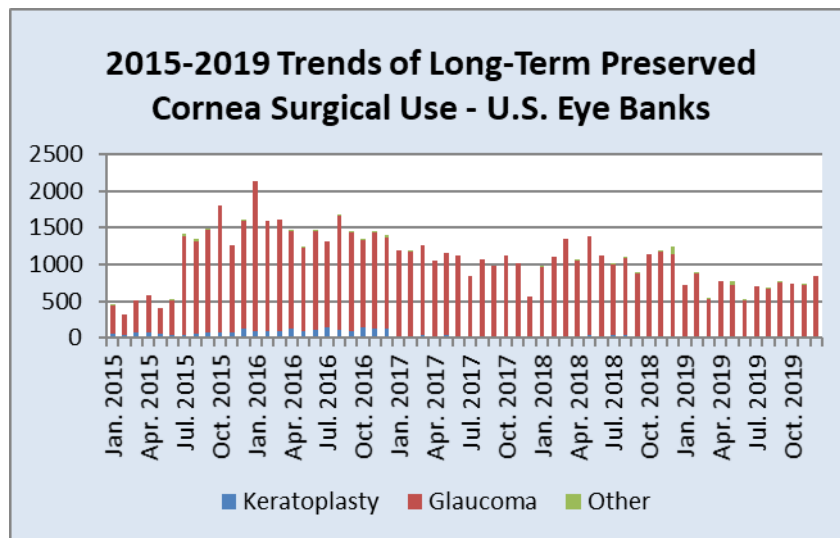
## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Long-Term Preserved Tissue Distribution

Long-Term Preserved Tissue Preservation and Distribution		
	2018	2019
Long-term preserved corneas or whole globes PRESERVED for transplant	6,263	6,067
Long-term preserved corneas, corneal segments, or whole globes DISTRIBUTED for:	13,521	8,614
Keratoplasty	298	126
Glaucoma Shunt patching	13,066	8,420
Other Surgical Uses	157	68
Long-term preserved corneas, corneal segments, or whole globes FORWARDED to another entity for final distribution	789	577
Sclera or sclera segments PRESERVED for transplantation	4,332	3,148
Sclera or sclera segments DISTRIBUTED for:	2,959	5,999
Prosthesis following enucleation	515	495
Glaucoma shunt patching	1,900	1,989
Other surgical uses	544	3,515
Sclera or sclera segments FORWARDED to another entity for final distribution	172	268



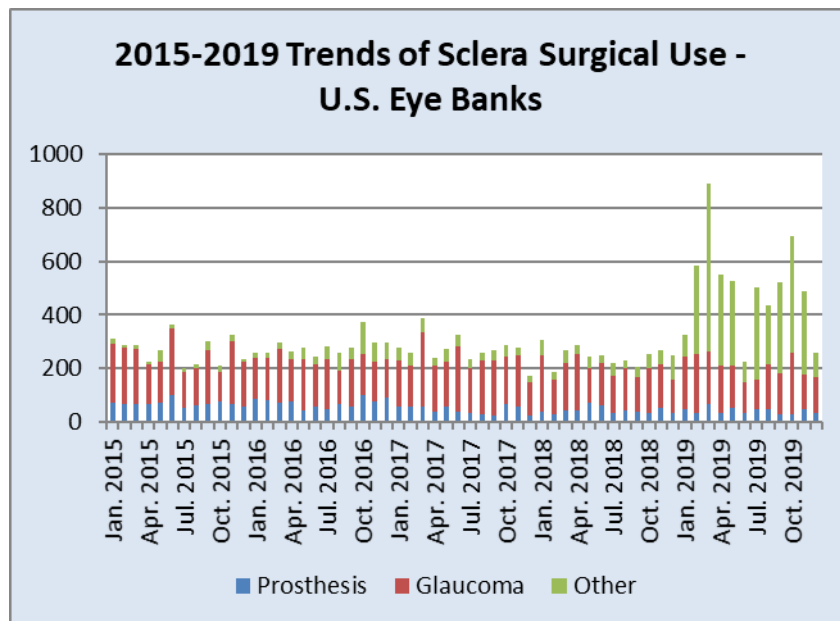
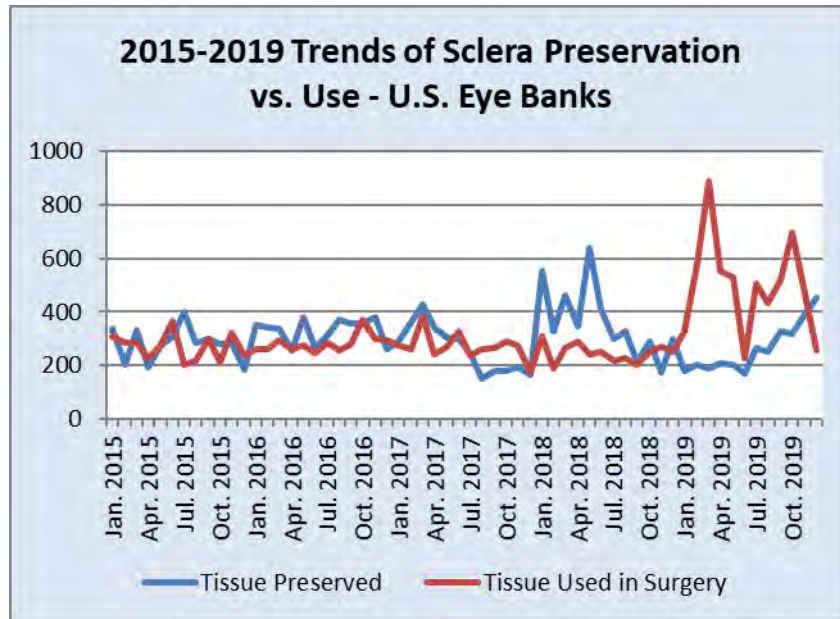
## 2019 Eye Banking Statistics Reported by U.S. Banks: Long-Term Preserved Tissue Distribution

Long-Term Tissue Trends - U.S. Eye Banks								
Month	Long-Term Preserved Corneas	Long-Term Cornea Use - Keratoplasty	Long-Term Cornea Use - Glaucoma	Long-Term Cornea Use - Other	Scleral Segments Preserved	Sclera Use - Prosthesis	Sclera Use - Glaucoma	Sclera Use - Other
Jan. 2019	489	4	723	0	180	48	196	82
Feb. 2019	485	9	861	2	205	32	220	330
Mar. 2019	455	7	522	9	189	64	200	625
Apr. 2019	505	5	768	0	206	34	176	342
May 2019	614	10	714	47	202	51	158	318
Jun. 2019	416	20	483	1	168	34	113	78
Jul. 2019	484	13	690	0	267	45	114	345
Aug. 2019	587	19	651	2	251	48	167	220
Sep. 2019	487	11	742	4	326	27	152	340
Oct. 2019	512	6	727	0	318	29	231	436
Nov. 2019	507	10	714	3	384	49	128	311
Dec. 2019	526	12	825	0	452	34	134	88
<b>2015 Total</b>	<b>4,681</b>	<b>737</b>	<b>10,843</b>	<b>92</b>	<b>3,362</b>	<b>822</b>	<b>2,175</b>	<b>228</b>
<b>2016 Total</b>	<b>7,068</b>	<b>1,335</b>	<b>16,683</b>	<b>115</b>	<b>3,990</b>	<b>852</b>	<b>1,944</b>	<b>584</b>
<b>2017 Total</b>	<b>6,718</b>	<b>197</b>	<b>12,345</b>	<b>1</b>	<b>3,139</b>	<b>523</b>	<b>2,266</b>	<b>464</b>
<b>2018 Total</b>	<b>6,263</b>	<b>298</b>	<b>13,066</b>	<b>157</b>	<b>4,332</b>	<b>515</b>	<b>1,900</b>	<b>544</b>
<b>2019 Total</b>	<b>6,067</b>	<b>126</b>	<b>8,420</b>	<b>68</b>	<b>3,148</b>	<b>495</b>	<b>1,989</b>	<b>3,515</b>
<b>2019 Avg.</b>	<b>506</b>	<b>11</b>	<b>702</b>	<b>6</b>	<b>262</b>	<b>41</b>	<b>166</b>	<b>293</b>
<b>Std. Dev.</b>	<b>53</b>	<b>5</b>	<b>109</b>	<b>13</b>	<b>90</b>	<b>11</b>	<b>40</b>	<b>159</b>



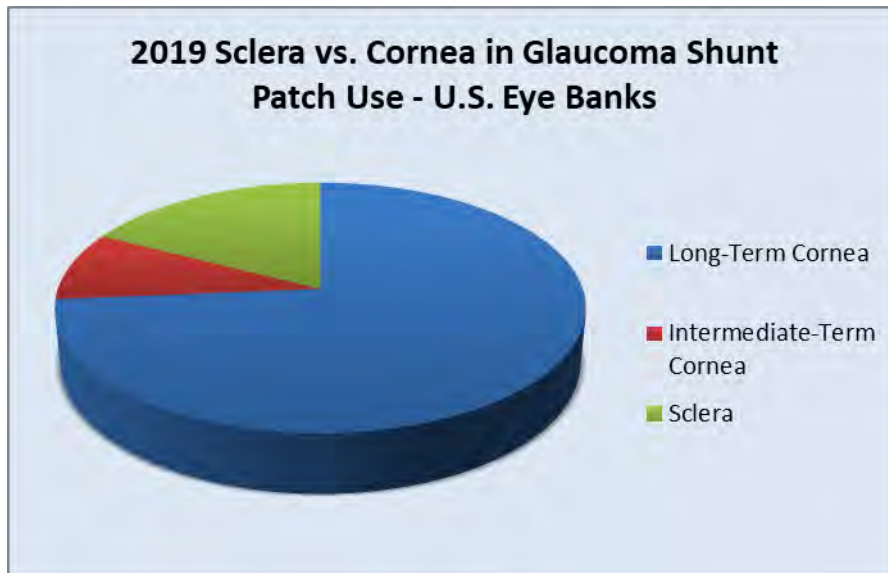
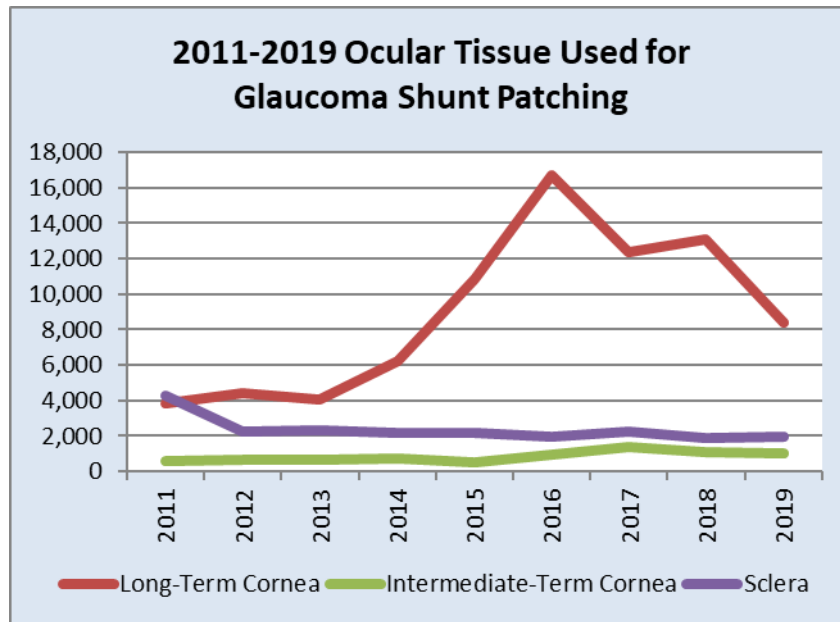


## 2019 Eye Banking Statistics Reported by U.S. Banks: Long-Term Preserved Tissue Distribution



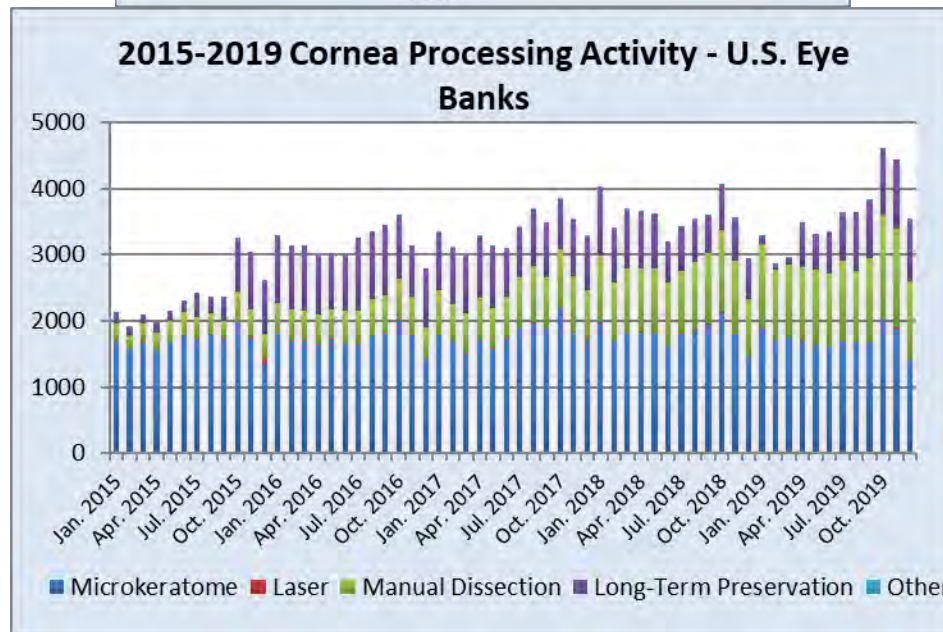
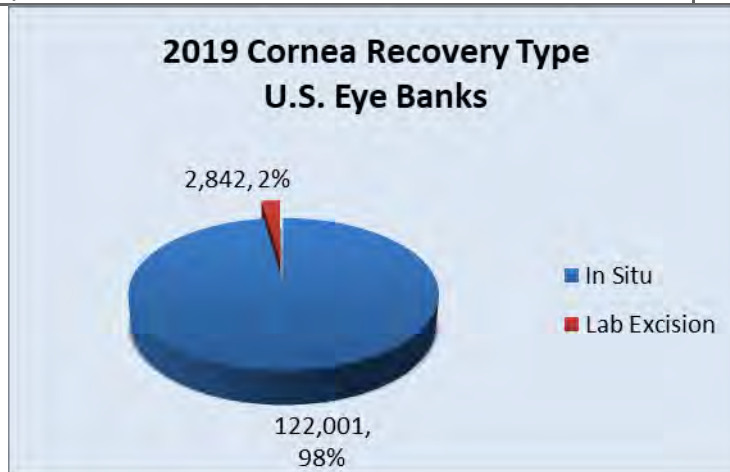
## 2019 Eye Banking Statistics Reported by U.S. Banks: Long-Term Preserved Tissue Distribution

Ocular Tissue Used for Glaucoma Shunt Patching - U.S. Eye Banks										
Ocular Tissue Used for Glaucoma Shunt Patching	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Long-Term Cornea	3,802	4,435	4,040	6,212	10,843	16,683	12,345	13,066	8,420	
Intermediate-Term Cornea	604	676	687	755	527	917	1,368	1,058	1,018	
Sclera	4,285	2,260	2,293	2,199	2,175	1,944	2,266	1,900	1,989	



## 2019 Eye Banking Statistics Reported by U.S. Banks: Tissue Processing for Transplant

Tissue Processing for Transplant		
	2018	2019
Eye Processing (does not include in situ excision)	<b>2,221</b>	<b>2,842</b>
Processed for corneal preservation only	323	1,115
Processed for sclera preservation	1,866	1,697
Processed for other ocular materials	32	30
Cornea Processing	<b>42,650</b>	<b>42,968</b>
Processed by microkeratome	21,683	20,594
Processed by laser	124	79
Processed by hand dissection	11,994	14,635
Processed by transfer into long-term preservation	8,803	7,634
Processed by other methods	46	26



## 2019 Eye Banking Statistics Reported by U.S. Banks: Tissue Processing for Transplant

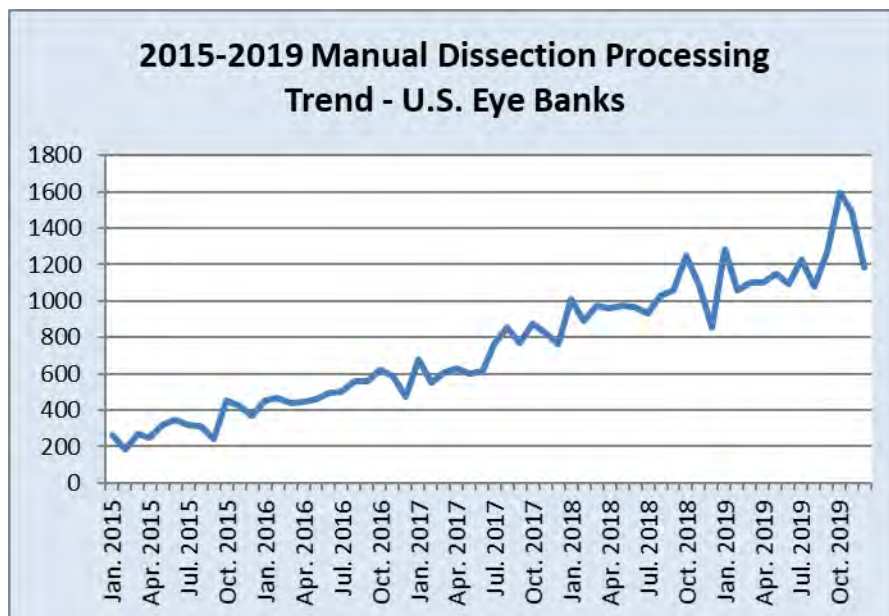
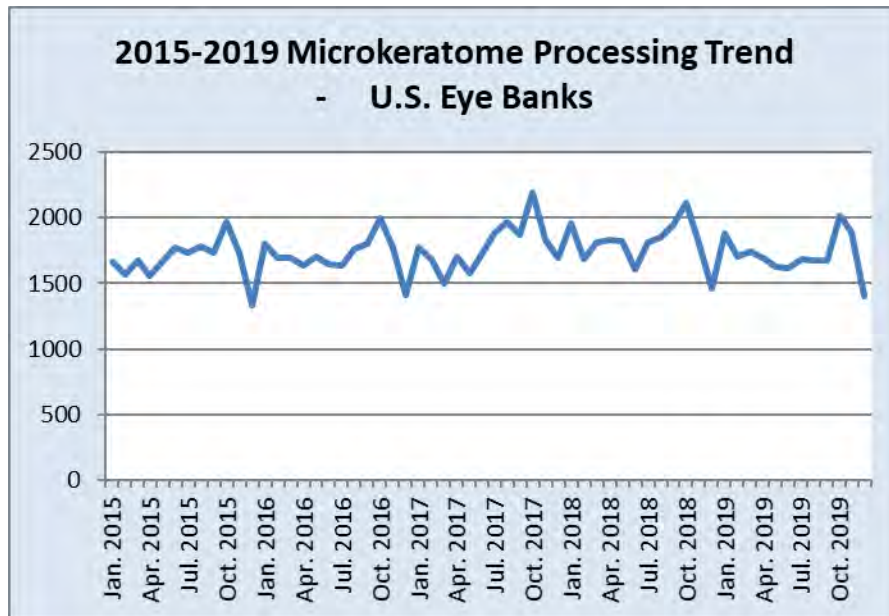
Cornea Processing - U.S. Eye Banks					
Month	Processing - Microkeratome	Processing - Laser	Processing - Manual	Processing - Long-Term Preservation	Processing - Other
Jan. 2019	1,881	8	1,281	113	7
Feb. 2019	1,705	7	1,055	97	0
Mar. 2019	1,743	9	1,102	100	6
Apr. 2019	1,695	9	1,101	683	0
May 2019	1,623	6	1,153	543	0
Jun. 2019	1,613	5	1,093	623	6
Jul. 2019	1,682	6	1,230	710	4
Aug. 2019	1,674	5	1,079	891	0
Sep. 2019	1,677	2	1,266	872	3
Oct. 2019	2,016	5	1,593	999	0
Nov. 2019	1,887	8	1,496	1,047	0
Dec. 2019	1,398	9	1,186	956	0
<b>2015 Total</b>	<b>20,193</b>	<b>262</b>	<b>3,759</b>	<b>4,440</b>	<b>6</b>
<b>2016 Total</b>	<b>20,604</b>	<b>154</b>	<b>6,071</b>	<b>11,346</b>	<b>5</b>
<b>2017 Total</b>	<b>21,409</b>	<b>151</b>	<b>8,528</b>	<b>10,019</b>	<b>60</b>
<b>2018 Total</b>	<b>21,683</b>	<b>124</b>	<b>11,994</b>	<b>8,803</b>	<b>46</b>
<b>2019 Total</b>	<b>20,594</b>	<b>79</b>	<b>14,635</b>	<b>7,634</b>	<b>26</b>
<b>2019 Avg.</b>	<b>1,716</b>	<b>7</b>	<b>1,220</b>	<b>636</b>	<b>2</b>
<b>Std. Dev.</b>	<b>157</b>	<b>2</b>	<b>170</b>	<b>356</b>	<b>3</b>

Cornea Processing Success Rates - U.S. Eye Banks										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Processing Events	18,455	22,599	24,168	24,347	28,660	38,180	40,167	42,650	42,968	
Failed Processing	431	621	726	828	1,016	1,281	1,516	1,757	1,571	
Success Rate	97.7%	97.3%	97.0%	96.6%	96.5%	96.6%	96.2%	95.9%	96.3%	

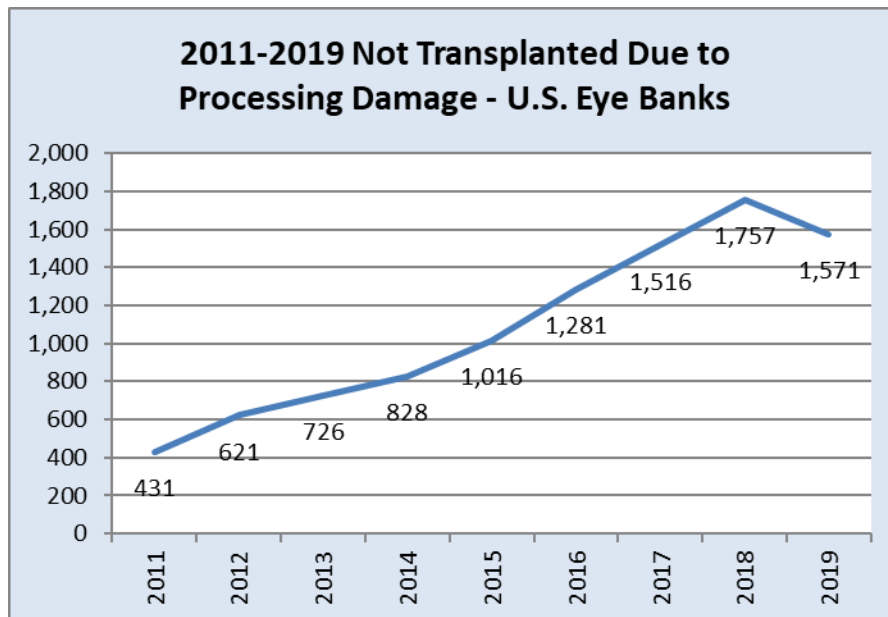
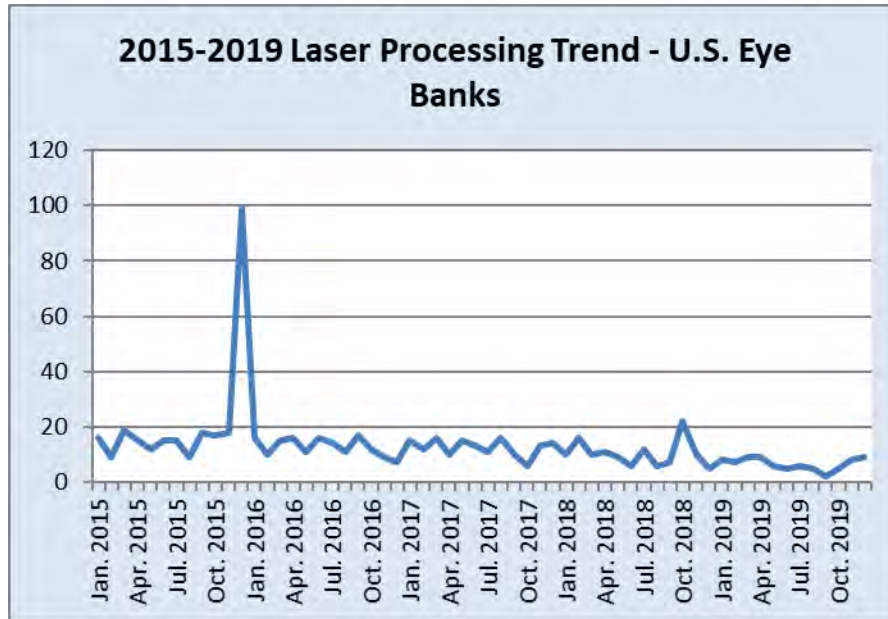
  

Cornea Recovery Methods - U.S. Eye Banks										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trends
In Situ	96,847	98,512	106,710	113,163	117,250	121,971	120,861	121,001	122,001	
Lab Excision	4,686	5,262	3,655	2,908	2,437	2,678	2,855	2,221	2,842	

## 2019 Eye Banking Statistics Reported by U.S. Banks: Tissue Processing for Transplant



## 2019 Eye Banking Statistics Reported by U.S. Banks: Tissue Processing for Transplant



## 2019 Eye Banking Statistics Reported by EBAA Members: Countries of Destination

NORTH AMERICA			
Country	US Member Eye Banks - Transplanted Corneas	Non-US Member Eye Banks - Transplanted Corneas	All EBAA Member Eye Banks - Transplanted Corneas
Antigua and Barbuda	4	0	4
Barbados	27	0	27
Belize	4	0	4
Canada	231	3,183	3,414
Costa Rica	65	18	83
Dominican Republic	449	0	449
El Salvador	72	0	72
Guatemala	94	0	94
Haiti	16	0	16
Honduras	175	0	175
Jamaica	39	0	39
Mexico	864	0	864
Nicaragua	8	0	8
Saint Vincent	6	0	6
Trinidad and Tobago	41	0	41
United States	51,337	0	51,337
<b>TOTAL</b>	<b>53,432</b>	<b>3,201</b>	<b>56,633</b>

AUSTRALIA and OCEANIA			
Country	US Member Eye Banks - Transplanted Corneas	Non-US Member Eye Banks - Transplanted Corneas	All EBAA Member Eye Banks - Transplanted Corneas
New Zealand	24	0	24
<b>TOTAL</b>	<b>24</b>	<b>0</b>	<b>24</b>

<b>SOUTH AMERICA</b>			
<b>Country</b>	<b>US Member Eye Banks - Transplanted Corneas</b>	<b>Non-US Member Eye Banks - Transplanted Corneas</b>	<b>All EBAA Member Eye Banks - Transplanted Corneas</b>
Argentina	377	0	377
Bolivia	81	0	81
Brazil	210	0	210
Chile	237	0	237
Colombia	2	0	2
Ecuador	184	0	184
Guyana	4	0	4
Paraguay	24	0	24
Peru	183	0	183
Suriname	28	0	28
Uruguay	24	0	24
Venezuela	145	0	145
<b>TOTAL</b>	<b>1,499</b>	<b>0</b>	<b>1,499</b>

<b>EUROPE</b>			
<b>Country</b>	<b>US Member Eye Banks - Transplanted Corneas</b>	<b>Non-US Member Eye Banks - Transplanted Corneas</b>	<b>All EBAA Member Eye Banks - Transplanted Corneas</b>
Albania	14	0	14
Bulgaria	3	0	3
Croatia	1	0	1
Cyprus	18	0	18
Germany	1,290	36	1,326
Greece	252	0	252
Iceland	1	0	1
Italy	5	0	5
Latvia	9	0	9
Macedonia	46	0	46
Monaco	1	0	1
Netherlands	13	0	13
Norway	45	0	45
Serbia	43	0	43
Switzerland	47	0	47
Ukraine	4	0	4
United Kingdom	57	0	57
<b>TOTAL</b>	<b>1,849</b>	<b>36</b>	<b>1,885</b>

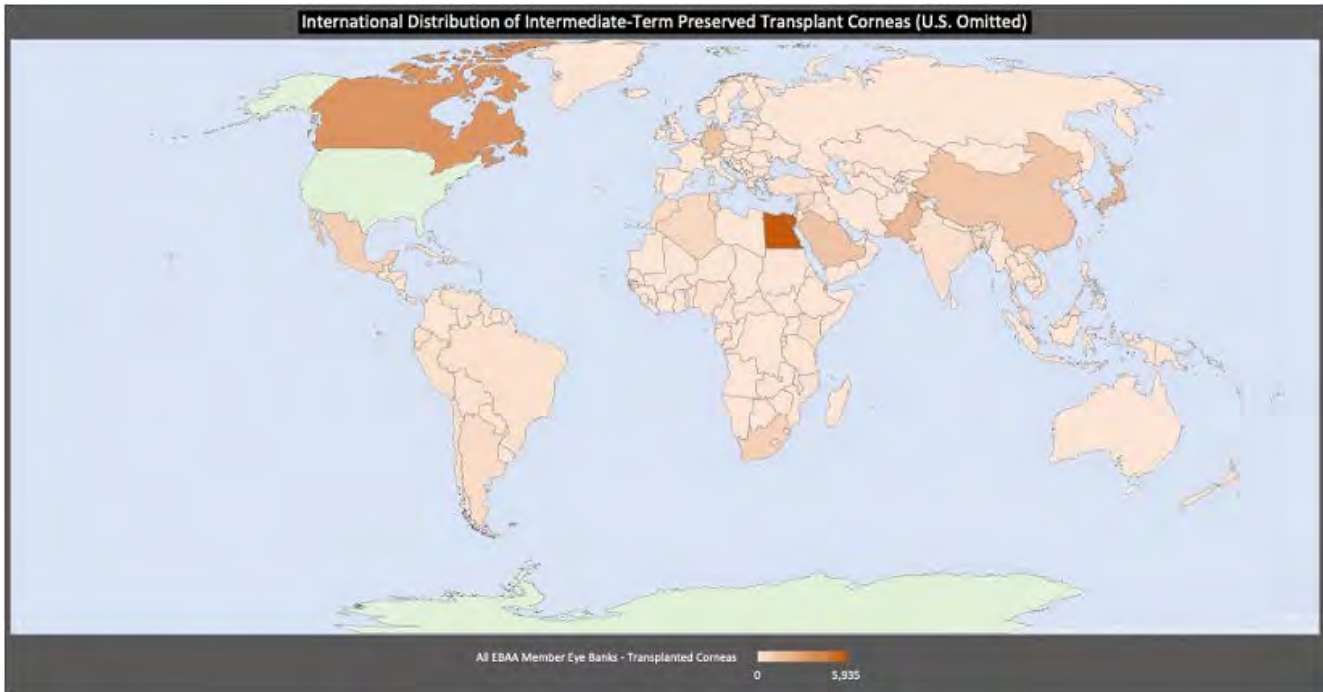


AFRICA			
Country	US Member Eye Banks - Transplanted Corneas	Non-US Member Eye Banks- Transplanted Corneas	All EBAA Member Eye Banks - Transplanted Corneas
Algeria	513	0	513
Botswana	1	0	1
Burundi	11	0	11
Chad	1	0	1
Congo	1	0	1
Cote d'Ivoire	10	0	10
Djibouti	1,409	0	1,409
Egypt	5,935	0	5,935
Eritrea	1	0	1
Ghana	59	0	59
Kenya	265	0	265
Liberia	12	0	12
Mali	1	0	1
Mauritania	10	0	10
Mauritius	47	0	47
Morocco	416	0	416
Mozambique	30	0	30
Namibia	13	0	13
Nigeria	142	0	142
Rwanda	85	0	85
Senegal	1	0	1
South Africa	851	0	851
Sudan	42	0	42
Swaziland	16	0	16
Tanzania	49	0	49
Tunisia	720	0	720
Uganda	40	0	40
Zambia	36	0	36
Zimbabwe	10	0	10
<b>TOTAL</b>	<b>10,711</b>	<b>0</b>	<b>10,711</b>

<b>ASIA</b>			
<b>Country</b>	<b>US Member Eye Banks - Transplanted Corneas</b>	<b>Non-US Member Eye Banks- Transplanted Corneas</b>	<b>All EBAA Member Eye Banks - Transplanted Corneas</b>
Afghanistan	10	0	10
Armenia	112	0	112
Azerbaijan	70	0	70
Bahrain	56	0	56
Bangladesh	406	0	406
Cambodia	1	0	1
China	1,313	13	1,326
Georgia	41	0	41
Hong Kong	70	254	324
India	293	0	293
Indonesia	51	0	51
Iran	2	0	2
Iraq	273	0	273
Israel	315	102	417
Japan	1,999	60	2,059
Jordan	240	0	240
Kazakhstan	33	0	33
Korea, North	22	0	22
Korea, South	711	0	711
Kuwait	123	0	123
Lebanon	319	0	319
Malaysia	350	0	350
Mongolia	19	0	19
Myanmar	28	0	28
Oman	37	0	37
Pakistan	1,800	16	1,816
Palestine	40	0	40
Qatar	23	0	23
Saudi Arabia	1,363	0	1,363
Singapore	369	0	369
Syrian Arab Republic	579	0	579
Taiwan	208	0	208
Tajikistan	6	0	6
Thailand	152	0	152
Turkey	268	0	268
United Arab Emirates	211	0	211
Uzbekistan	12	0	12
Viet Nam	280	0	280
Yemen	2	0	2
<b>TOTAL</b>	<b>12,207</b>	<b>445</b>	<b>12,652</b>

## 2019 Eye Banking Statistics Reported by EBAA Member Banks: Countries of Destination

EBAA Member Eye Bank Distribution by Continent (Transplanted Corneas Stored in Intermediate-Term Solution)			
Continent	U.S. EBAA Member Eye Bank	International EBAA Member Eye Bank	EBAA Member Total
Asia	12,207	445	<b>12,652</b>
Africa	10,711	0	<b>10,711</b>
North America	53,432	3,201	<b>56,633</b>
South America	1,499	0	<b>1,499</b>
Antarctica	0	0	<b>0</b>
Europe	1,849	36	<b>1,885</b>
Australia & Oceania	24	0	<b>24</b>
<b>TOTAL</b>	<b>79,722</b>	<b>3,682</b>	<b>83,404</b>



## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

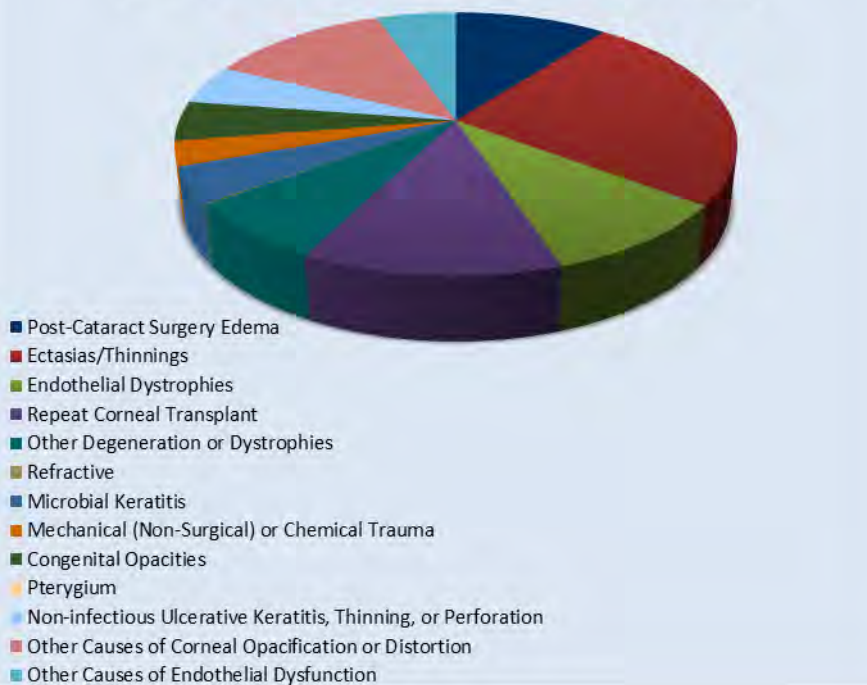
Indications for Penetrating Keratoplasty 2019	Domestic Use		International Use	
A. Post-cataract surgery edema	866	5.0%	544	2.9%
B. Ectasias/Thinnings	2,433	14.0%	1,290	7.0%
C. Endothelial Dystrophies	765	4.4%	502	2.7%
D. Repeat Corneal Transplant	3,220	18.5%	662	3.6%
E. Other degenerations or dystrophies	744	4.3%	385	2.14%
F. Refractive	32	0.2%	5	0.0%
G. Microbial keratitis	419	2.4%	230	1.2%
H. Mechanical or chemical trauma	433	2.5%	158	0.9%
I. Congenital opacities	265	1.5%	254	1.4%
J. Pterygium	4	0.0%	0	0.0%
K. Non-infectious ulcerative keratitis or perforation	1,199	6.9%	251	1.4%
L. Other causes of corneal dysfunction or distortion	1,683	9.7%	643	3.5%
M. Other causes of endothelial dysfunction	1,263	7.3%	284	1.5%
Z. Unknown, unreported, or unspecified	4,083	23.5%	13,302	71.9%
<b>Total Indications for Penetrating Keratoplasty</b>	<b>17,409</b>		<b>18,510</b>	
Indications for Anterior Lamellar Keratoplasty	Domestic use		International Use	
B. Ectasias/Thinnings	304	40.8%	210	15.0%
D. Repeat Corneal Transplant	27	3.6%	12	0.9%
E. Other degenerations or dystrophies	67	9.0%	60	4.3%
F. Refractive	2	0.3%	2	0.1%
G. Microbial keratitis	12	1.6%	12	0.9%
H. Mechanical or chemical trauma	25	3.4%	6	0.4%
I. Congenital opacities	12	1.6%	3	0.2%
J. Pterygium	0	0.0%	0	0.0%
K. Non-infectious ulcerative keratitis or perforation	41	5.5%	15	1.1%
L. Other causes of corneal dysfunction or distortion	141	18.9%	53	3.8%
Z. Unknown, unreported, or unspecified	114	15.3%	1,028	73.4%
<b>Total for Anterior Keratoplasty</b>	<b>745</b>		<b>1,401</b>	
Indications for Endothelial Keratoplasty	Domestic Use		International Use	
A. Post-Cataract Surgery Edema	3,595	11.7%	837	17.1%
C. Endothelial Dystrophy	16,652	54.3%	733	14.9%
D. Repeat Corneal Transplant	3,020	9.9%	350	7.1%
M. Other Causes of Endothelial Dysfunction	4,366	14.2%	876	17.9%
Z. Unknown, unreported, or unspecified	3,017	9.8%	2,109	43.0%
<b>Total for Endothelial Keratoplasty</b>	<b>30,650</b>		<b>4,905</b>	

## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

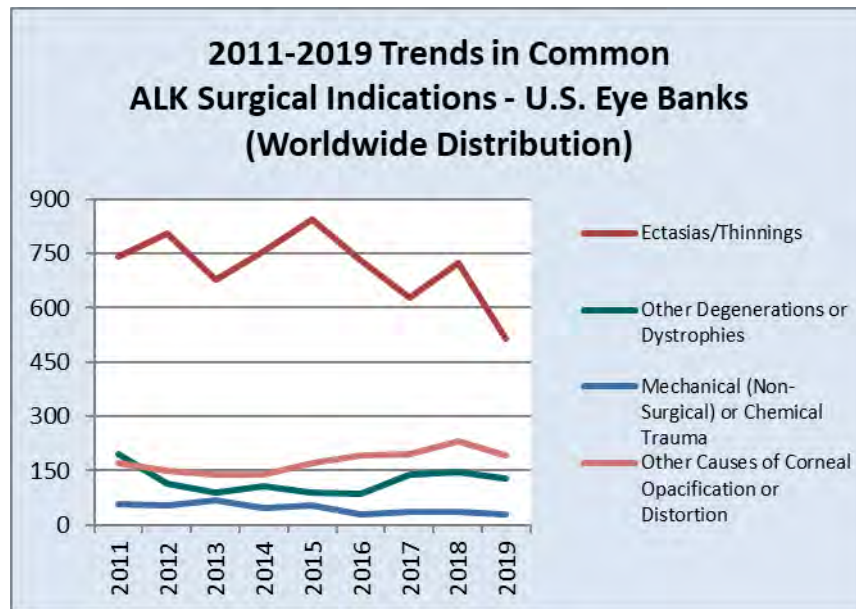
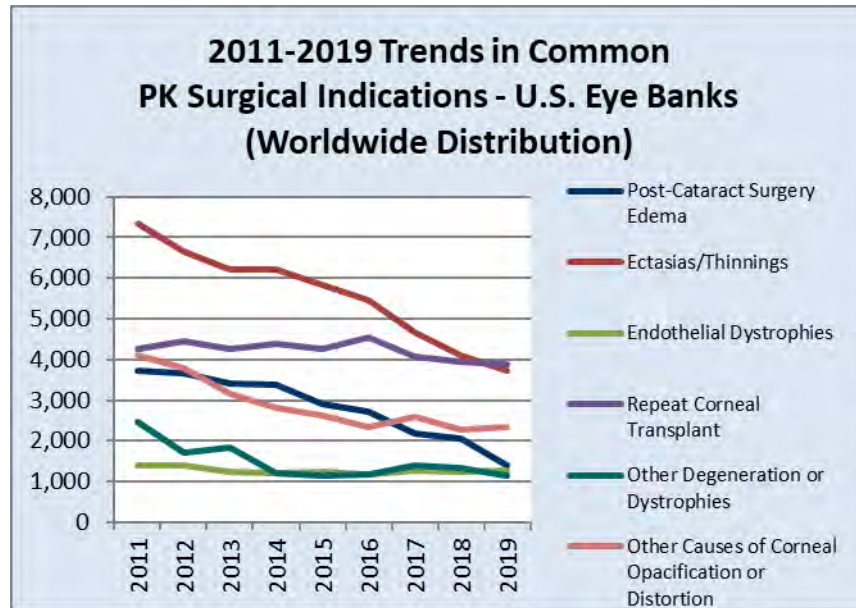
**2019 Indications for Penetrating Keratoplasty  
U.S. Eye Banks (Domestic Distribution)**



**2019 Indications for Penetrating Keratoplasty  
- U.S. Eye Banks (International Distribution)**



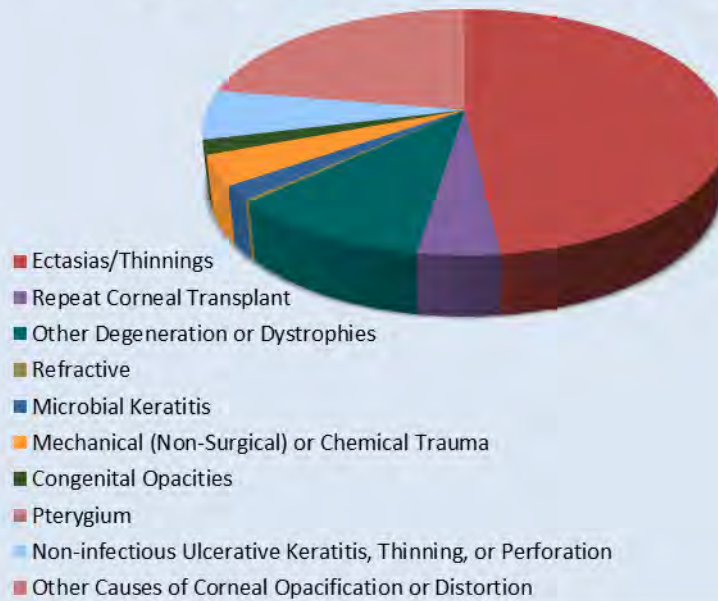
## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks



\*Worldwide Distribution = Combined Domestic and International Distribution

## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

**2019 Indications for Anterior Lamellar Keratoplasty  
U.S. Eye Banks (Domestic Distribution)**



**2019 Indications for Anterior Lamellar Keratoplasty -  
U.S. Eye Banks (International Distribution)**



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## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

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**2019 Indications for Endothelial Keratoplasty -  
U.S. Eye Banks (Domestic Distribution)**



- Post-Cataract Surgery Edema
- Endothelial Dystrophies
- Repeat Corneal Transplant
- Other Causes of Endothelial Dysfunction

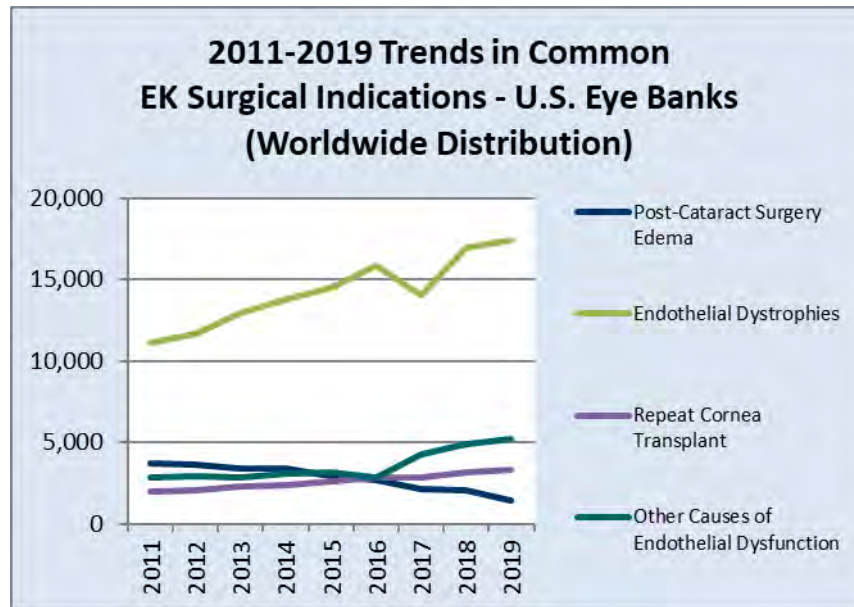
**2019 Indications for Endothelial Keratoplasty -  
U.S. Eye Banks (International Distribution)**



- Post-Cataract Surgery Edema
- Endothelial Dystrophies
- Repeat Corneal Transplant
- Other Causes of Endothelial Dysfunction



## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks



\*Worldwide Distribution = Combined Domestic and International Distribution

## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

### 2019 (Domestically Distributed Corneas Only) - U.S. Eye Banks

	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
<b>PK</b>	866	2,433	765	3,220	744	32	419	433	265	4	1,199	1,683	1,263	4,083
<b>EK</b>	3,595		16,652	3,020									4,366	3,017
<b>ALK</b>		304		27	67	2	12	25	12	0	41	141		114

### 2019 (Internationally Distributed Corneas Only) - U.S. Eye Banks

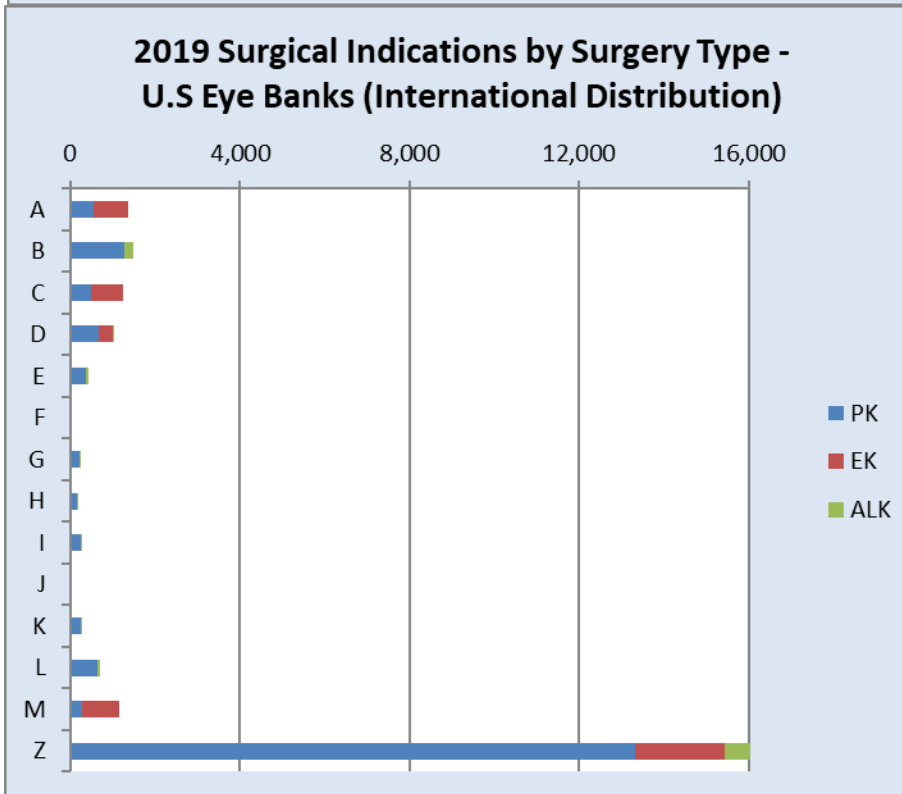
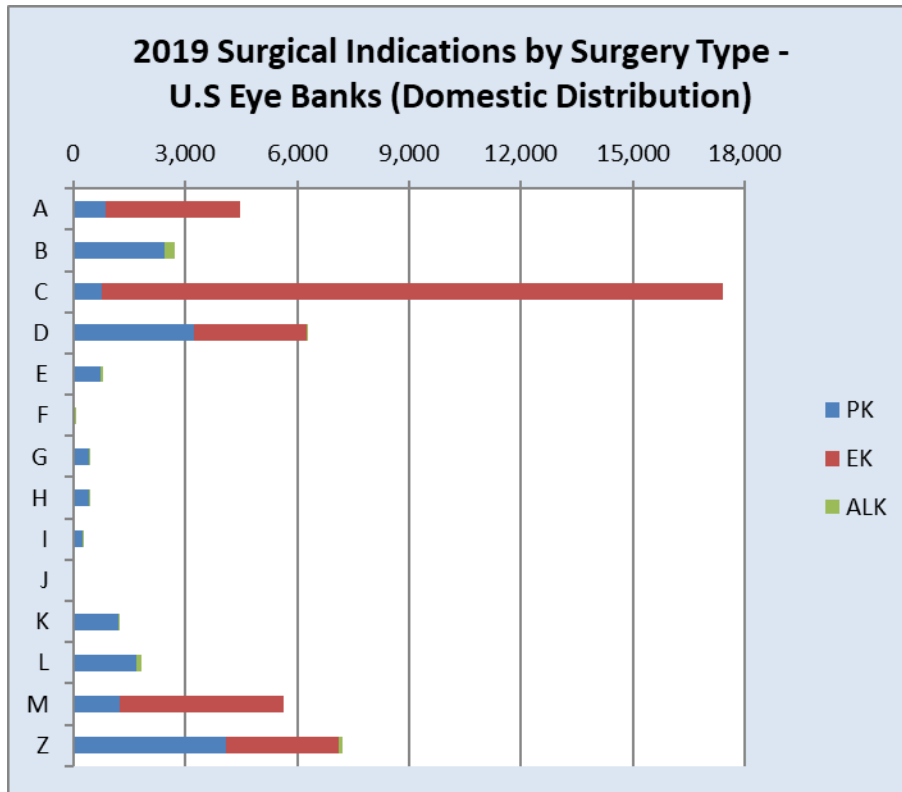
	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
<b>PK</b>	544	1,290	502	662	385	5	230	158	254	0	251	643	284	13,302
<b>EK</b>	837		733	350									876	2,109
<b>ALK</b>		210		12	60	2	12	6	3	0	15	53		1028

### 2019 (Combined Domestic & International Distributed Corneas) - U.S. Eye Banks

	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
<b>PK</b>	1,410	3,723	1,267	3,882	1,129	37	649	591	519	4	1,450	2,326	1,547	17,385
<b>EK</b>	4,432		17,385	3,370									5,242	5,126
<b>ALK</b>		514		39	127	4	24	31	15	0	56	194		1,142

- A - Post-Cataract Surgery Edema
- B - Ectasias/Thinnings
- C - Endothelial Dystrophies
- D - Repeat Corneal Transplant
- E - Other Degeneration or Dystrophies
- F - Refractive
- G - Microbial Keratitis
- H - Mechanical (Non-Surgical) or Chemical Trauma
- I - Congenital Opacities
- J - Pterygium
- K - Non-infectious Ulcerative Keratitis, Thinning, or Perforation
- L - Other Causes of Corneal Opacification or Distortion
- M - Other Causes of Endothelial Dysfunction
- Z - Unknown or Unreported

## 2019 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

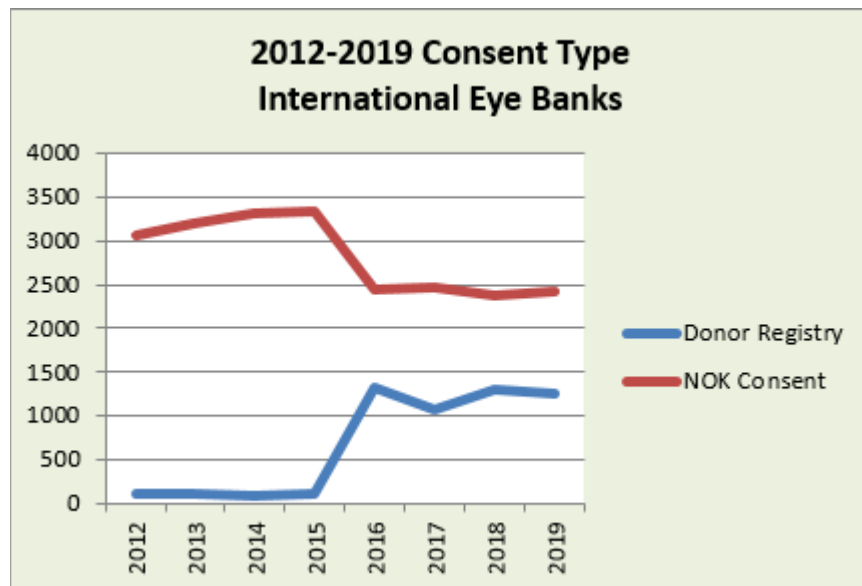


**2019**  
**Eye Banking Statistics**  
**From EBAA**  
**International Members**

## 2019 International Eye Banking Statistics Donations and Tissue Recoveries

Donations	2015	2016	2017	2018	2019
Number of Eye Banks Reporting	10	11	11	11	11
Total Whole Eyes and Corneas Donated	6,846	7,520	7,061	7,291	7,271
Total Number of Donors	3,466	3,776	3,547	3,677	3,669

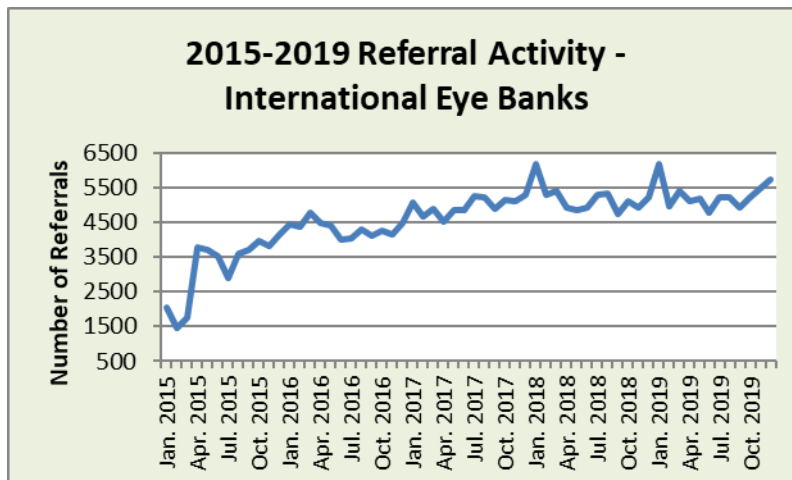
Death Referrals	2017	2018	2019
Total Death Referrals	59,833	62,270	63,512
Death referrals Determined Eligible	12,169	11,993	11,728
Tissue Recoveries			
Total Donors	3,547	3,677	3,669
Donors recovered not found on donor registry or known to have first person consent	2,478	2,367	2,421
Donors recovered found on donor registry or known to have first person consent	1,069	1,310	1,248
Eyes or Corneas Recovered with Intent for Surgical Use	6,753	6,559	6,551
Eyes or Corneas Recovered for Other Uses	308	732	720



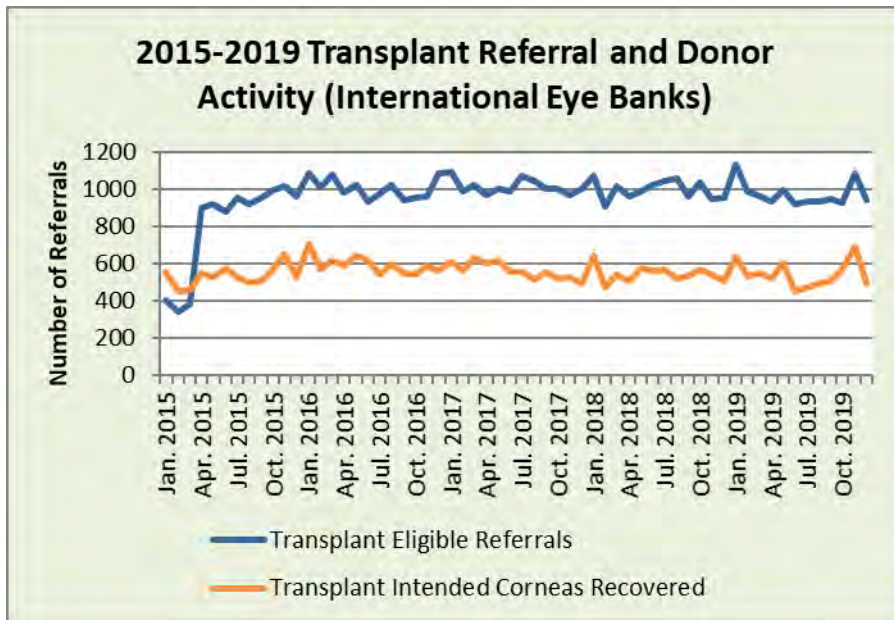
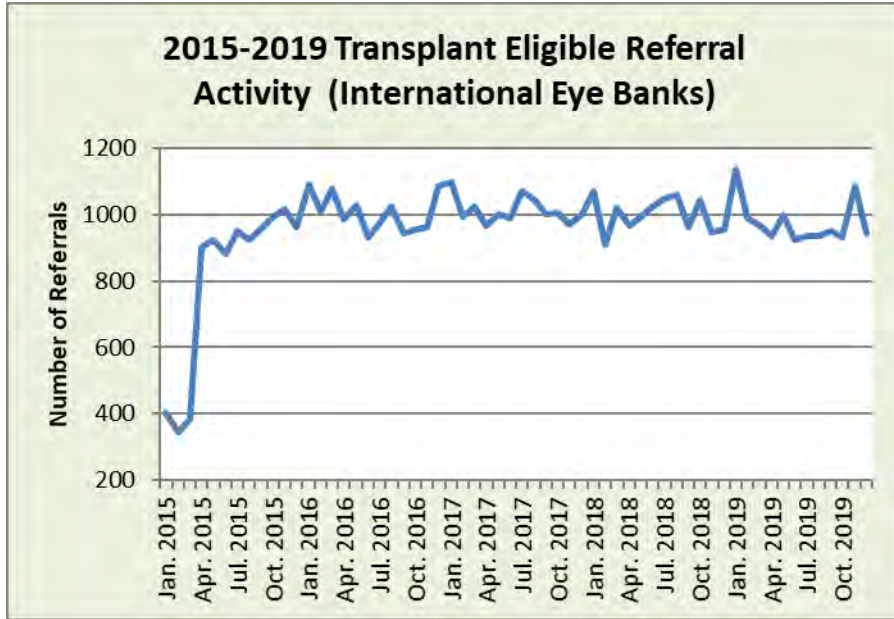
## 2019 International Eye Banking Statistics Referral Trends, Transplant and Conversion Rates

Transplant & Conversion Rates - International Eye Banks					
Month	Transplant Rate	Conversion Rate	Death Referrals	Transplant Eligible Referrals	Transplant Intended Corneas Recovered
Jan. 2019	55.4%	28.3%	6,174	1,136	641
Feb. 2019	57.0%	27.7%	4,982	990	537
Mar. 2019	57.9%	28.9%	5,412	965	551
Apr. 2019	63.0%	28.3%	5,104	936	524
May 2019	61.5%	30.4%	5,203	996	605
Jun. 2019	69.1%	25.3%	4,769	924	456
Jul. 2019	63.5%	25.6%	5,243	934	477
Aug. 2019	57.6%	26.5%	5,236	937	493
Sep. 2019	62.7%	27.1%	4,923	952	510
Oct. 2019	60.9%	30.7%	5,222	930	568
Nov. 2019	53.4%	32.1%	5,488	1,085	693
Dec. 2019	53.2%	26.4%	5,756	943	496
<b>2015 Total</b>	59.5%	33.6%	38,418	9,651	6,403
<b>2016 Total</b>	56.1%	29.9%	51,946	12,333	7,333
<b>2017 Total</b>	54.5%	27.9%	59,833	12,169	6,753
<b>2018 Total</b>	57.4%	27.6%	62,270	11,993	6,559
<b>2019 Total</b>	59.3%	28.2%	63,512	11,728	6,551
<b>2019 Avg.</b>	N/A	N/A	5,293	977	546
<b>Std. Dev.</b>	4.7%	2.1%	382	67	70

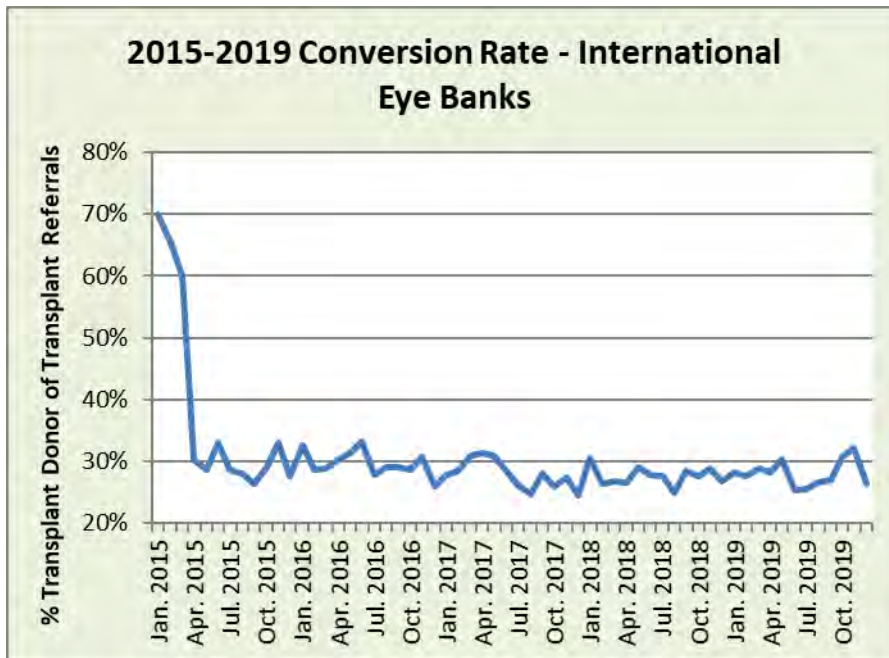
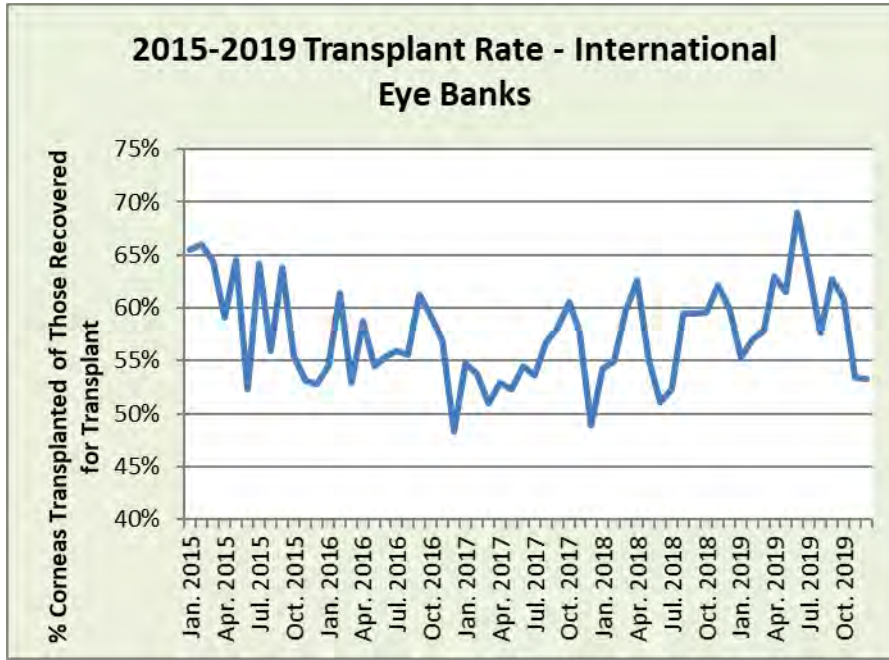
\*Transplant rate is the number of corneas used for transplant divided by the number recovered for transplant.  
Conversion rate is the number of transplant donors divided by the number of transplant eligible referrals.



## 2019 International Eye Banking Statistics Referral Trends, Transplant and Conversion Rates



## 2015 International Eye Banking Statistics Transplant and Conversion Rates

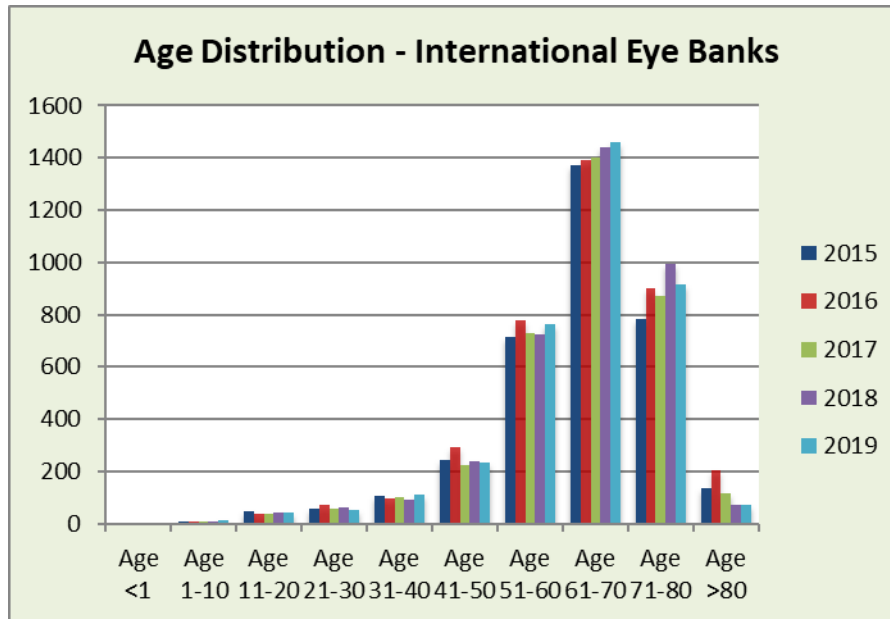


Transplant rate is the number of corneas used for transplant divided by the number recovered for transplant.  
Conversion rate is the number of transplant donors divided by the number of transplant eligible referrals.



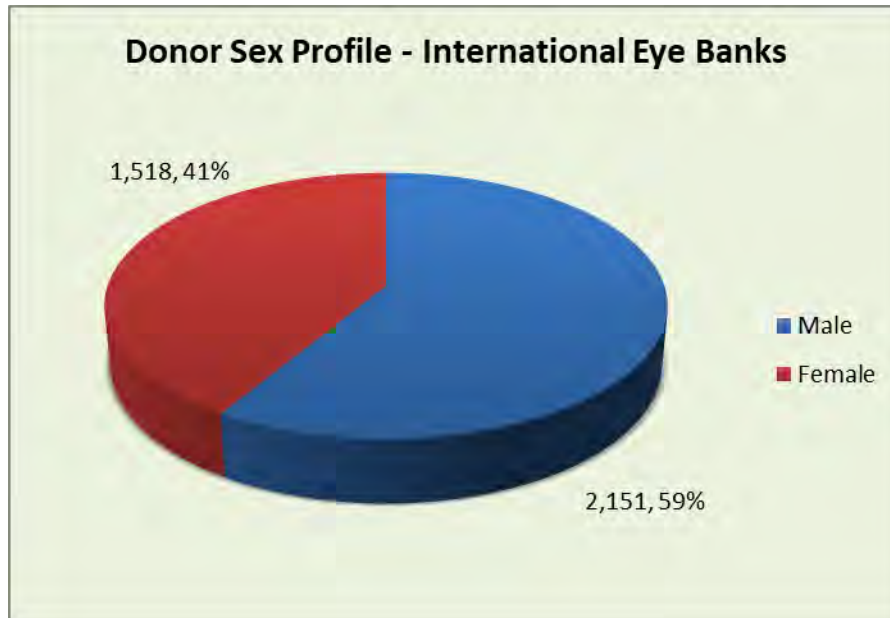
## 2019 International Eye Banking Statistics Donor Profiles: Age

Age Demographics - International Eye Banks										
Year	Age <1	Age 1-10	Age 11-20	Age 21-30	Age 31-40	Age 41-50	Age 51-60	Age 61-70	Age 71-80	Age >80
2015	0	8	45	59	104	244	715	1,372	784	135
2016	0	7	35	71	94	291	778	1,393	901	206
2017	0	8	35	58	101	222	731	1,403	873	116
2018	0	9	40	64	93	240	722	1,439	995	73
2019	0	15	40	51	112	236	765	1,460	916	74
<b>Monthly Avg.</b>	0	1	3	4	9	20	64	122	76	6
<b>Std. Dev.</b>	0.0	0.8	2.5	1.6	2.7	5.7	6.4	24.0	12.5	1.9



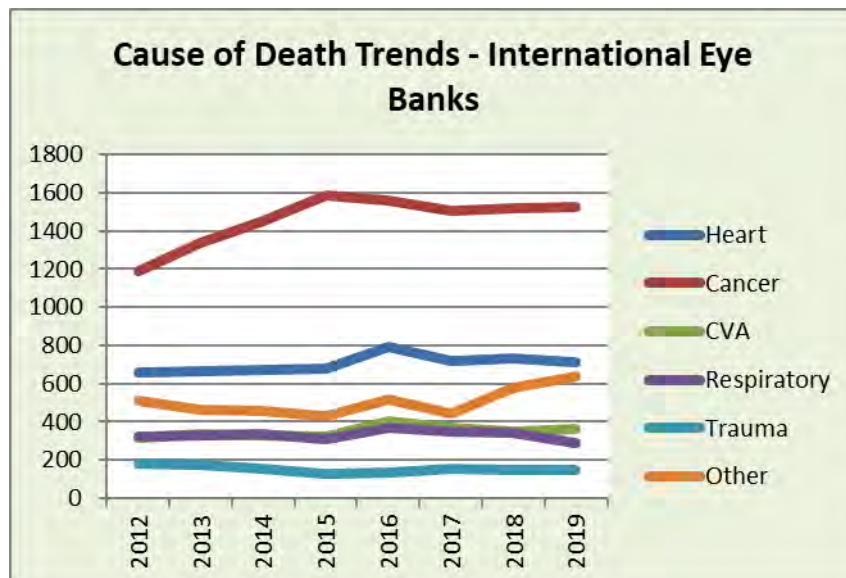
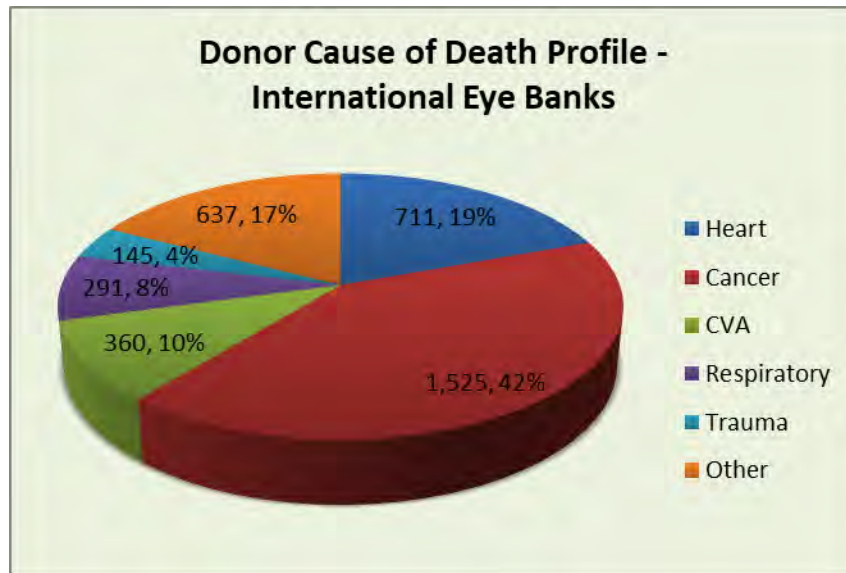
## 2019 International Eye Banking Statistics Donor Profiles: Gender and Cause of Death

Sex Demographics - International Eye Banks		
Year	Male	Female
2015	2,058	1,408
2016	2,252	1,524
2017	2,077	1,470
2018	2,182	1,495
2019	2,151	1,518
<b>Monthly Avg.</b>	179	127
<b>Std. Dev.</b>	18.1	18.1



## 2019 International Eye Banking Statistics Donor Profiles: Cause of Death









International Eye Banks - Cause of Death Profile						
Year	Heart	Cancer	CVA	Respiratory	Trauma	Other
<b>2015 Total</b>	681	1,588	325	310	130	432
<b>2016 Total</b>	793	1,557	403	371	134	518
<b>2017 Total</b>	722	1,507	370	351	153	444
<b>2018 Total</b>	735	1,518	350	343	151	580
<b>2019 Total</b>	711	1,525	360	291	145	637
<b>Monthly Avg.</b>	59	127	30	24	12	53
<b>Std. Dev.</b>	10.5	17.6	5.2	4.8	4.0	14.2



## 2019 International Eye Banking Statistics Reasons Tissue Intended for Surgery Was Not Suitable For Transplant

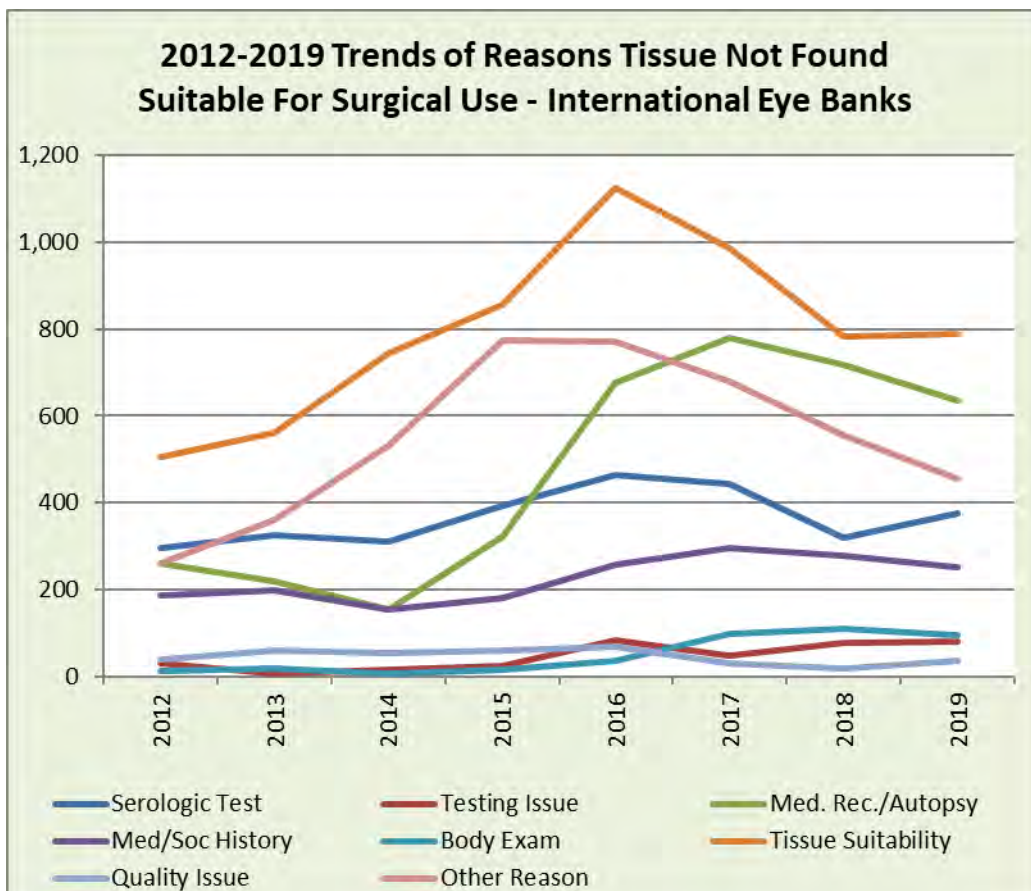
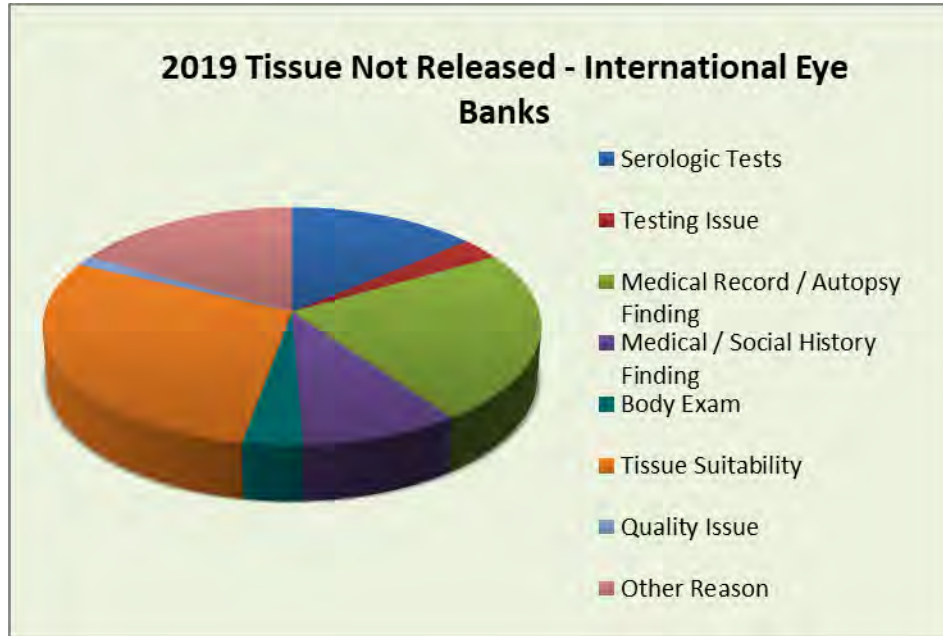
Contraindications for Transplant <sup>1</sup>	2018		2019	
<b>Donor Eligibility</b>	<b>1,501</b>	<b>60.2%</b>	<b>1,434</b>	<b>59.9%</b>
Positive or reactive test for communicable disease agent or disease	318	12.8%	374	15.6%
Other communicable disease testing issue	77	3.1%	80	3.3%
Medical record or autopsy findings	718	28.8%	635	26.5%
Medical/social history interview	278	11.2%	251	10.5%
Body Exam	110	4.4%	94	3.9%
<b>Tissue Suitability</b>	<b>783</b>	<b>31.4%</b>	<b>790</b>	<b>33.0%</b>
<b>Quality Issue</b>	<b>18</b>	<b>0.7%</b>	<b>36</b>	<b>1.5%</b>
<b>Other reason prior to tissue release</b>	<b>554</b>	<b>22.2%</b>	<b>454</b>	<b>19.0%</b>
<b>Total eyes/corneas intended for transplant but not released for transplant</b>	<b>2,492</b>		<b>2,392</b>	

\*Percentages read from this table should be read as "of the tissue not released for transplant"

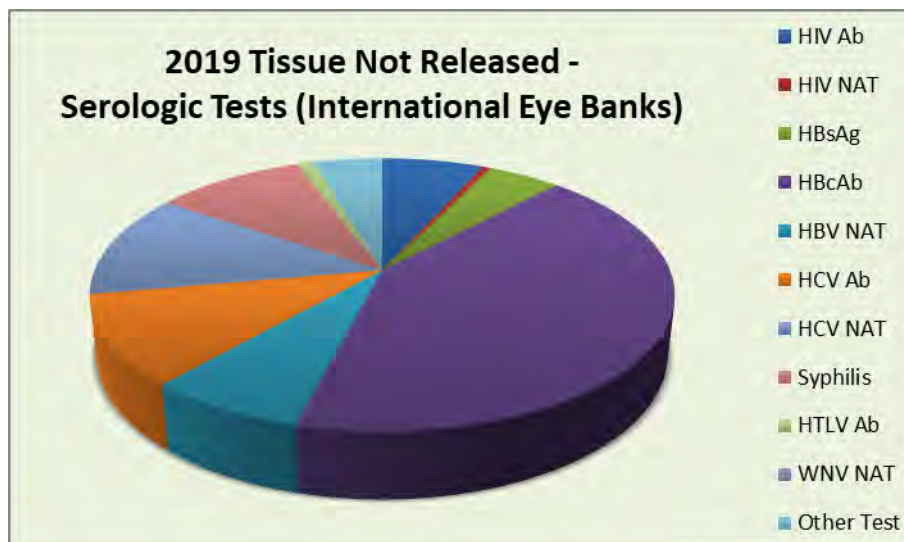
Reasons Corneas Recovered for Transplant Were Not Released - International Eye Banks									
Reasons Not Released	2012	2013	2014	2015	2016	2017	2018	2019	Trends
<b>Serology Tests</b>	296	326	310	394	464	442	318	374	
<b>Testing Issue</b>	31	8	16	24	83	47	77	80	
<b>Med. Rec./Autopsy Finding</b>	260	219	155	323	675	780	718	635	
<b>Med Soc Hx Finding</b>	186	197	154	182	258	297	278	251	
<b>Body Exam</b>	12	18	8	16	37	98	110	94	
<b>Tissue Suitability</b>	506	561	743	856	1,125	987	783	790	
<b>Quality Issue</b>	38	61	55	60	70	29	18	36	
<b>Other Reason</b>	260	360	531	775	770	678	554	454	

<sup>1</sup> Some tissues had multiple contraindications.

## 2019 International Eye Banking Statistics Reasons Tissue Intended for Surgery Was Not Released

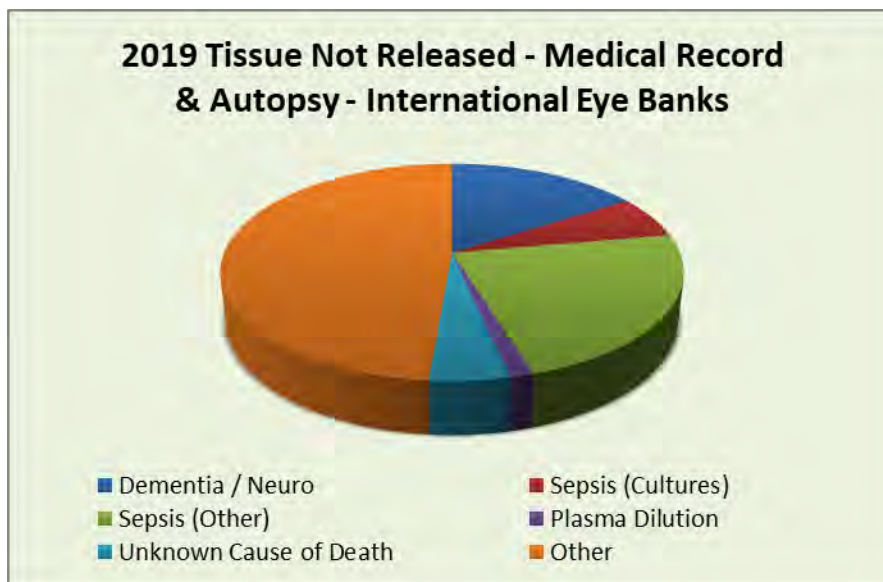
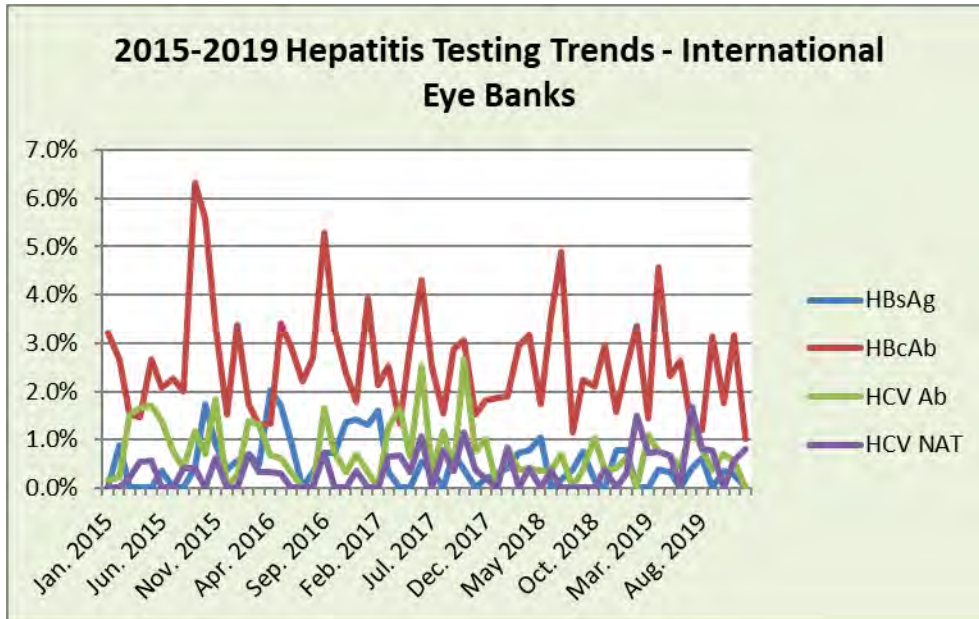


## 2019 International Eye Banking Statistics Reasons Tissue Intended for Surgery Was Not Released



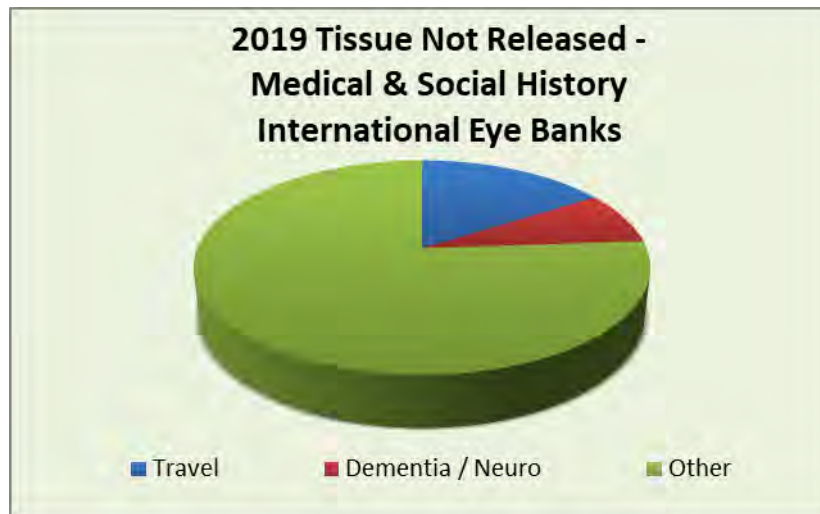
Corneas Not Released for Transplant (Serologic Testing) - International Eye Banks									
Not Released - Serology	2012	2013	2014	2015	2016	2017	2018	2019	Trend
<b>HIV</b>	10	18	22	37	30	34	22	27	
HIV I/II Ab	8	6	20	37	30	32	22	25	
HIV NAT	2	12	2	0	0	2	0	2	
<b>HBV</b>	165	200	203	213	263	209	219	203	
HBsAg	6	20	33	26	66	31	30	18	
HBcAb	159	180	169	187	187	173	165	157	
HBV NAT	0	0	1	0	10	5	24	28	
<b>HCV</b>	85	59	42	78	63	102	38	86	
HCV Ab	75	43	34	63	47	71	28	40	
HCV NAT	10	16	8	15	16	31	10	46	
<b>Syphilis</b>	6	16	22	41	64	59	15	37	
<b>HTLV</b>	12	11	14	5	20	12	6	4	
<b>WNV</b>	0	0	4	0	0	2	0	0	
<b>Other</b>	18	22	3	20	24	24	18	17	

## 2019 International Eye Banking Statistics Reasons Tissue Intended for Surgery Was Not Released



## 2019 International Eye Banking Statistics Reasons Tissue Intended for Surgery Was Not Suitable

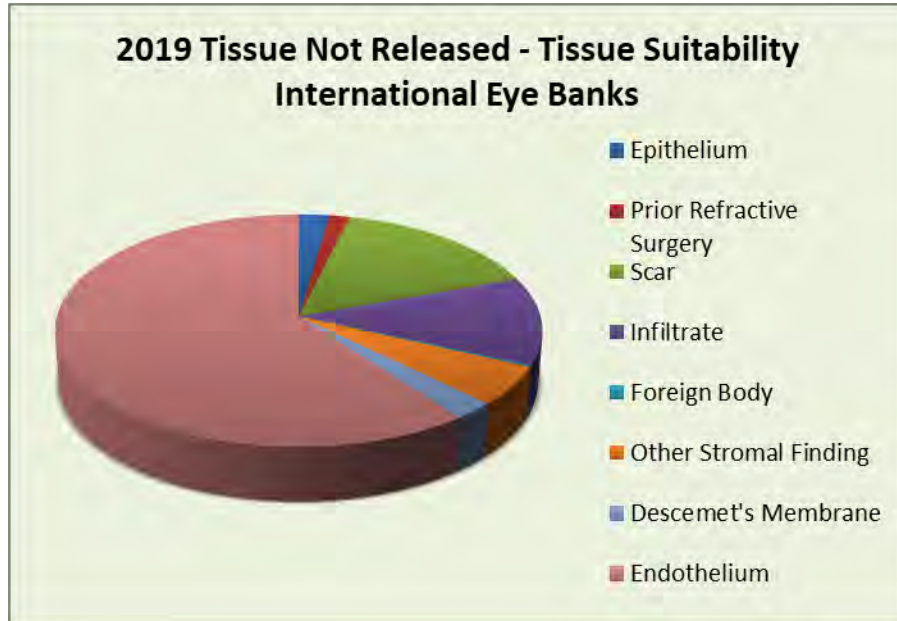
Corneas Not Released for Transplant (Medical Records) - International Eye Banks									
Not Released - Med Rec / Autopsy	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Dementia/Neuro	16	20	20	48	171	161	191	101	
Sepsis (Cultures)	68	39	23	26	50	46	80	40	
Sepsis (Other)	79	80	50	111	140	145	114	146	
Plasma Dilution	10	6	6	4	10	10	6	9	
Unknown COD	35	26	22	28	24	12	10	30	
Other	52	48	34	106	280	406	317	309	



Corneas Not Released for Transplant (Med Soc Hx) - International Eye Banks									
Not Released - Med Soc	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Travel	36	36	30	16	24	38	24	40	
Dementia/Neuro	2	24	30	40	19	24	43	20	
Other	136	137	94	126	215	235	211	191	



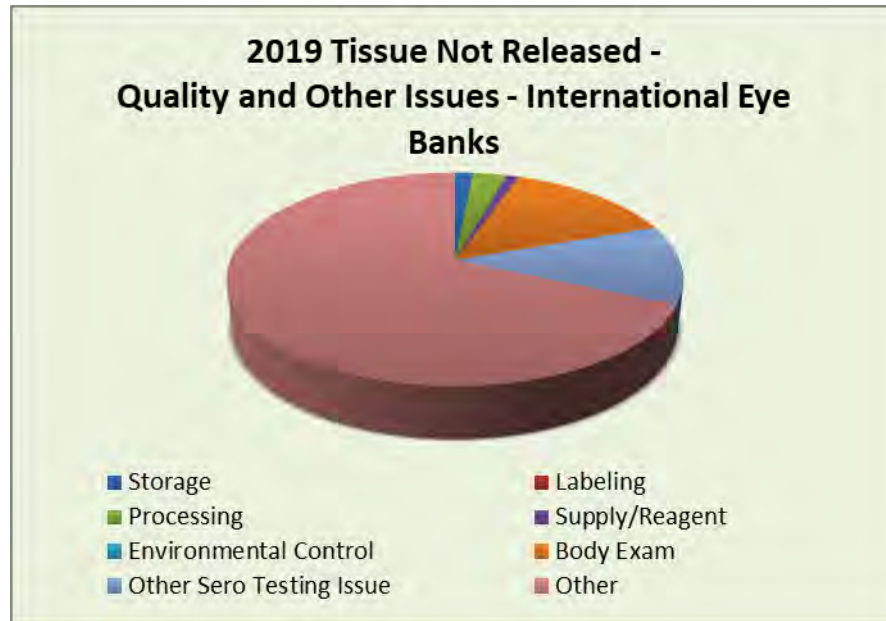
## 2019 International Eye Banking Statistics Tissue Suitability Reasons Tissue Was Not Released



Corneas Not Released for Transplant (Tissue Suitability) - International Eye Banks									
Not Released - Tissue Suitability	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Epithelium	31	55	65	45	54	37	10	18	
Prior Refractive Surgery	4	9	33	33	40	21	9	12	
Scar	68	93	142	238	282	328	156	124	
Infiltrate	76	81	107	106	164	85	106	96	
Foreign Body	7	3	28	21	25	23	6	2	
Other Stromal Finding	59	40	34	77	77	119	48	43	
Descemet's Membrane	4	3	34	16	35	10	23	19	
Endothelium	257	277	300	320	448	364	425	476	

## 2019 International Eye Banking Statistics

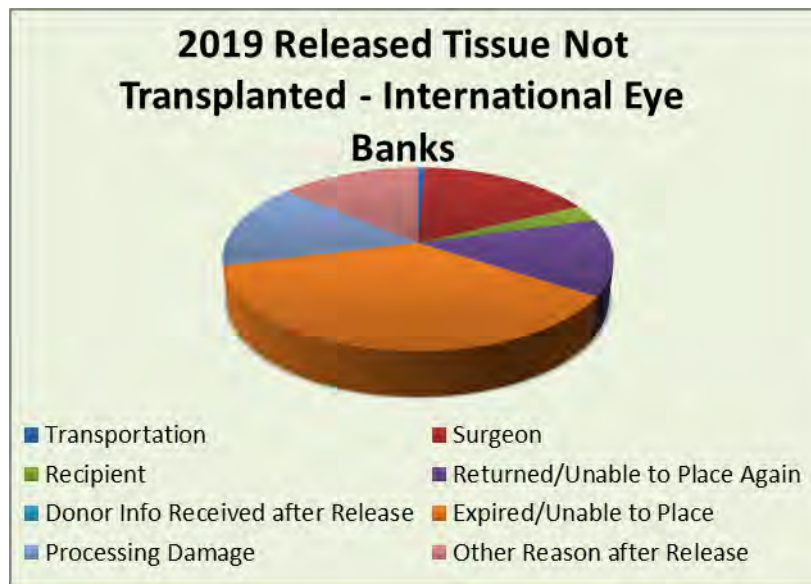
### Quality Reasons Tissue Intended for Surgery Was Not Released



Corneas Not Released for Transplant (Quality) - International Eye Banks									
Not Released - Quality Issues / Other	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Storage Issue	13	22	16	23	13	4	3	10	
Labeling Issue	0	5	11	9	10	0	0	0	
Processing Issue (not released)	21	14	10	8	11	8	8	19	
Supply / Reagent Issue	2	14	8	5	5	6	3	7	
Environmental Control Issue	2	6	10	15	31	11	4	0	
Body Exam	12	18	8	16	37	98	110	94	
Other Sero Testing Issue	31	8	16	24	83	47	77	80	
Other Issue	260	360	531	775	770	678	554	454	

## 2019 International Eye Banking Statistics Reasons Released Tissues Were Not Transplanted

Reasons Released Tissues Were Not Transplanted	2018		2019	
	Count	Percentage	Count	Percentage
Transportation Issue	2	0.7%	2	0.7%
Surgeon Issue	38	12.5%	52	18.6%
Recipient Issue	5	1.6%	9	3.2%
Returned and Unable to Place Again	26	8.6%	41	14.7%
Donor Information Not Available at the Time of Tissue Release	0	0.0%	0	0.0%
Expired or Unable to Place Tissue	156	51.3%	112	40.1%
Tissue Damaged During Processing	52	17.1%	46	16.5%
Other Reason After Release of Tissue	48	15.8%	42	15.1%
<b>Total eyes/corneas released for transplant but not used for transplant</b>	<b>304</b>		<b>279</b>	



Corneas Released but Not Transplanted - International Eye Banks									
Released But Not Transplanted	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Transport Issue	10	0	26	2	8	1	2	2	
Surgeon Issue	23	11	20	53	24	46	38	52	
Recipient Issue	5	3	5	6	6	6	5	9	
Returned, Unable to Place Again	55	53	56	24	32	35	26	41	
Donor Info Received After Release	0	0	0	2	7	2	0	0	
Expired, Unable to Place	246	198	316	234	215	219	156	112	
Processing Damage After Release	32	41	54	41	55	47	52	46	
Other Reason After Release	12	9	10	24	42	44	48	42	

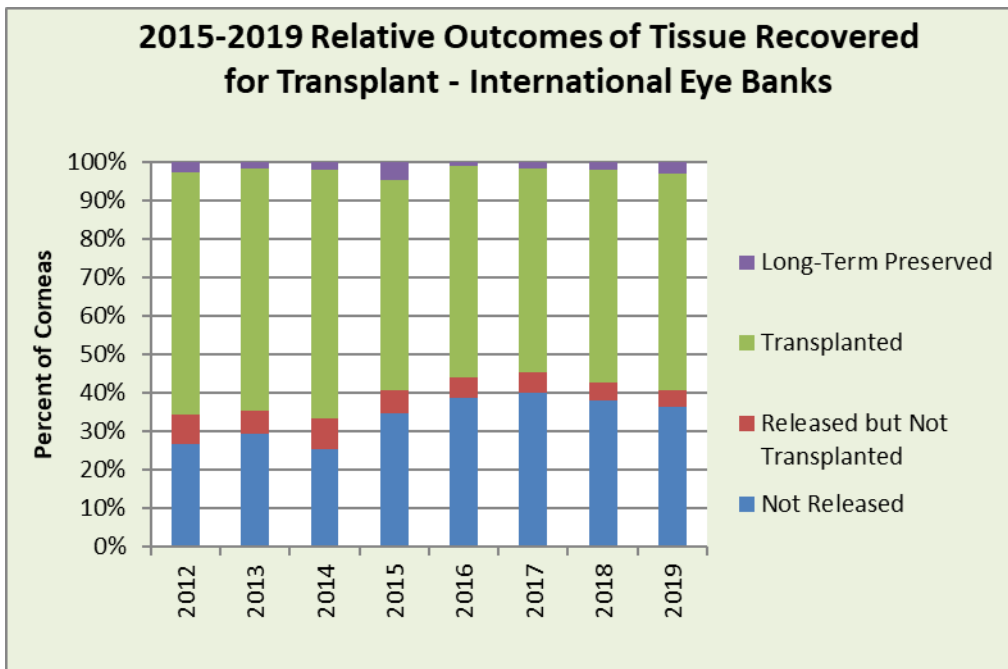
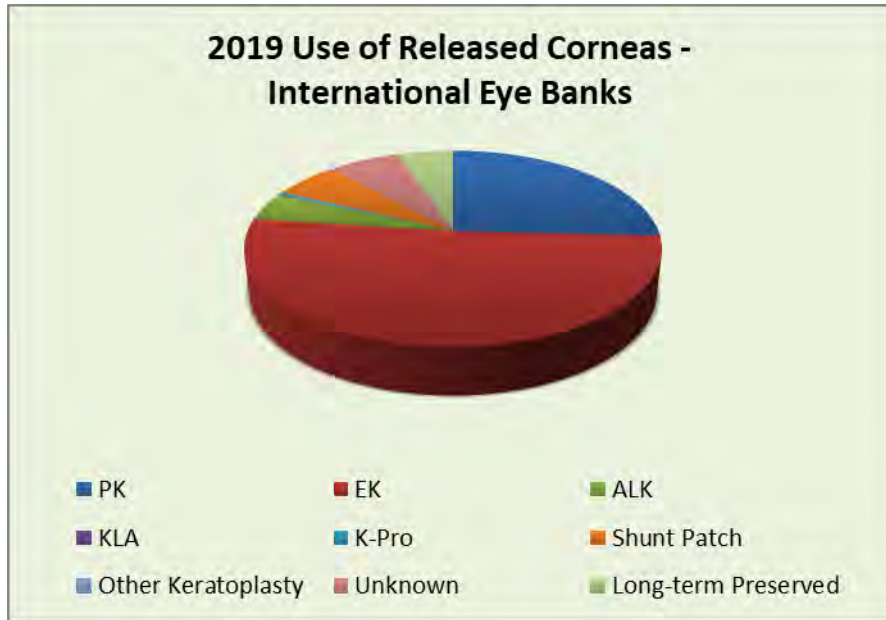
## 2019 International Eye Banking Statistics Outcomes of Tissue Recovered for Transplant

Donations	2018	2019	% Change
Eye Banks Reported	11	11	0.0%
Total Whole Eyes and Corneas Donated	7,291	7,271	(-0.3%)
Total Number of Donors	3,677	3,669	(-0.2%)
Distribution	2018	2019	
Intermediate-Term Preserved Corneas	3,631	3,682	1.4%
Sclera	1,193	1,420	19.0%
Long-Term Preserved Corneas	88	191	117.0%
Research	310	124	(-60.0%)
Training	1,997	1,958	(-2.0%)

Outcomes of Corneas Recovered for Transplant Use - International Eye Banks											
Month	Corneas Recovered for Transplant	Corneas Segmented	Corneal Segments Produced	Not Released		Released but Not Transplanted		Whole Corneas and Segments Transplanted		Preserved Long-Term	
Jan. 2019	641	0	0	255	39.8%	31	4.8%	339	52.9%	16	2.5%
Feb. 2019	537	0	0	207	38.5%	24	4.5%	281	52.3%	25	4.7%
Mar. 2019	551	0	0	210	38.1%	22	4.0%	303	55.0%	16	2.9%
Apr. 2019	524	1	2	173	33.0%	22	4.2%	320	61.0%	10	1.9%
May 2019	605	1	2	191	31.6%	43	7.1%	355	58.6%	17	2.8%
Jun. 2019	456	1	2	124	27.2%	18	3.9%	298	65.2%	17	3.7%
Jul. 2019	477	0	0	153	32.1%	21	4.4%	286	60.0%	17	3.6%
Aug. 2019	493	0	0	186	37.7%	23	4.7%	272	55.2%	12	2.4%
Sep. 2019	510	0	0	182	35.7%	8	1.6%	313	61.4%	7	1.4%
Oct. 2019	568	1	2	207	36.4%	16	2.8%	331	58.2%	15	2.6%
Nov. 2019	693	0	0	305	44.0%	18	2.6%	351	50.6%	19	2.7%
Dec. 2019	496	0	0	199	40.1%	33	6.7%	233	47.0%	31	6.3%
<b>2015 Total</b>	6,403	29	30	2,217	34.6%	380	5.9%	3,500	54.7%	307	4.8%
<b>2016 Total</b>	7,333	0	0	2,838	38.7%	379	5.2%	4,035	55.0%	81	1.1%
<b>2017 Total</b>	6,753	1	1	2,692	39.9%	380	5.6%	3,570	52.9%	111	1.6%
<b>2018 Total</b>	6,559	4	7	2,492	38.0%	304	4.6%	3,631	55.3%	135	2.1%
<b>2019 Total</b>	6,551	4	8	2,392	36.5%	279	4.3%	3,682	56.2%	202	3.1%
<b>2019 Avg.</b>	546	0	1	199	N/A	23	N/A	307	N/A	17	N/A
<b>Std. Dev.</b>	70	0.49	1.0	46	4.6%	9	1.6%	36	5.2%	6	1.3%

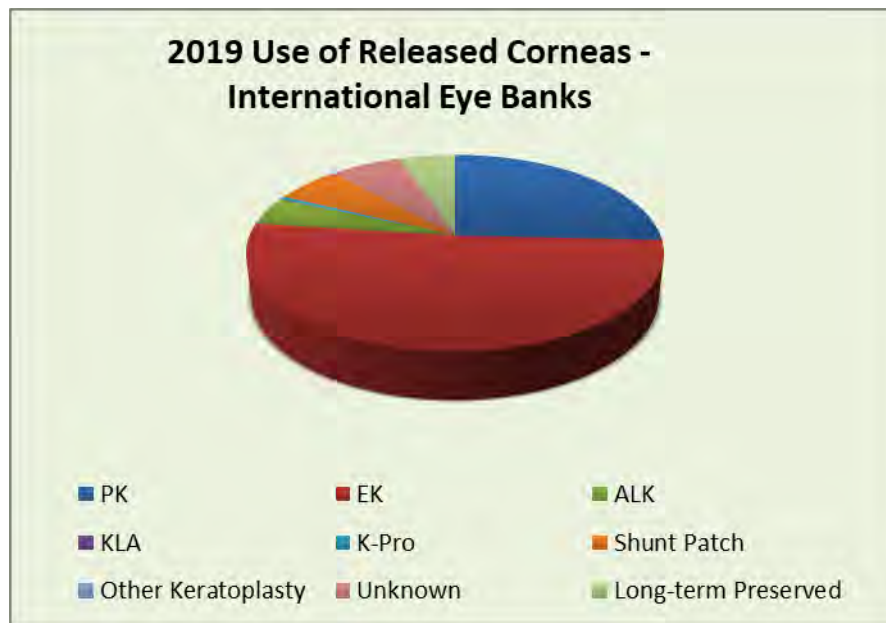
\*Percentages read from this table should be read as "of the tissue recovered with transplant intent"

## 2019 International Eye Banking Statistics Outcomes of Tissues Recovered for Transplant



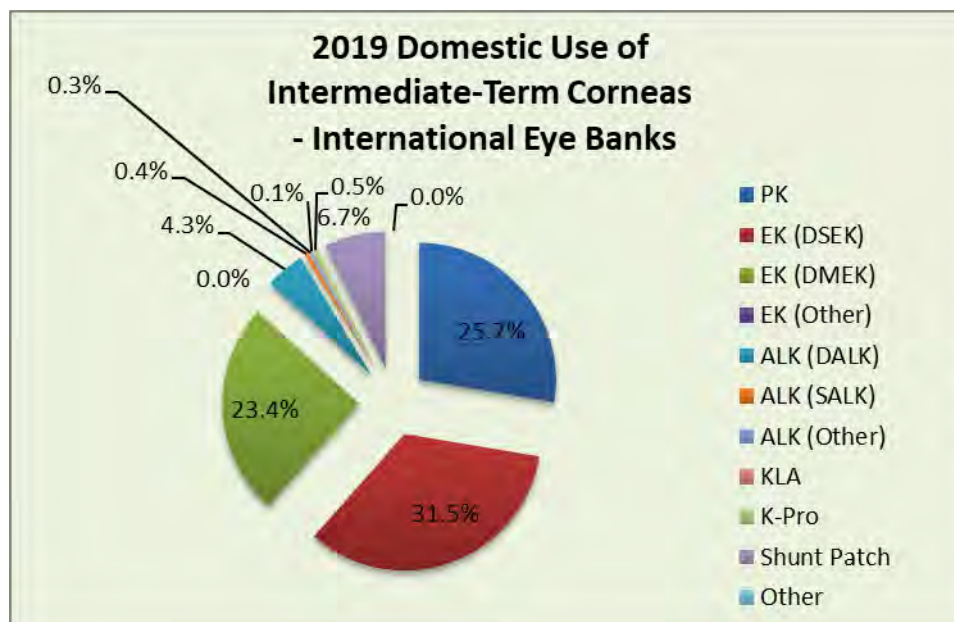
## 2019 International Eye Banking Statistics Use of Donated Tissues

Use of Donated Tissue	2015	2016	2017	2018	2019
Corneal Grafts Total	3,806	4,116	3,681	3,628	3,880
Penetrating Keratoplasty	1,403	1,399	1,248	1,055	1,001
Anterior Lamellar Keratoplasty	192	142	174	182	181
Endothelial Keratoplasty	1,523	1,890	1,736	1,865	1,991
Keratolimbic Allograft	8	4	6	3	3
Keratoprosthesis (K-Pro)	15	24	10	11	18
Glaucoma Shunt Patch or other non-keratoplasty use	240	313	229	245	239
Other keratoplasty (experimental surgery)	1	3	3	8	1
Unknown or Unspecified	118	260	164	262	248
Sclera	882	1,077	995	1,193	1,420
Long-Term Preserved Corneas	108	92	93	88	191
Keratoplasty	5	2	6	3	13
Glaucoma Shunt Patching	102	89	62	62	126
Other Surgical Uses	1	1	25	23	52
Research	402	300	200	310	124
Training	1,547	1,663	1,992	1,997	1,958



## 2019 International Eye Banking Statistics Intermediate-Term Tissue Distribution

Intermediate-Term Tissue Distribution of Source Eye Bank Corneas for Domestic Use		
	2018	2019
Intermediate-term preserved corneas, corneal segments or whole eyes transplanted <b>domestically</b> for:	<b>3,535</b>	<b>3,546</b>
PK	<b>1,003</b>	<b>912</b>
EK	<b>1,825</b>	<b>1,948</b>
DSEK, DSAEK, DLEK	1,078	1,117
DMEK or DMAEK	744	831
PDEK	0	0
Other EK	3	0
ALK	<b>180</b>	<b>177</b>
DALK (Deep Anterior Lamellar Keratoplasty)	160	152
SALK (Superficial Anterior Lamellar Keratoplasty)	11	15
Other ALK (e.g. peripheral, eccentric, etc.)	9	10
KLA	3	3
Keratoprosthesis (K-Pro)	11	18
Glaucoma shunt patch or other non-keratoplasty use	243	239
Other Keratoplasty (e.g. experimental surgery type)	8	1
Unknown or Unspecified	262	248
<b>Total intermediate-term preserved corneas, corneal segments, and whole eyes used for KERATOPLASTY</b>	<b>3,386</b>	<b>3,439</b>
<b>Total intermediate-term preserved corneas, corneal segments, and whole eyes used for TRANSPLANT</b>	<b>3,628</b>	<b>3,678</b>



## 2019 International Eye Banking Statistics

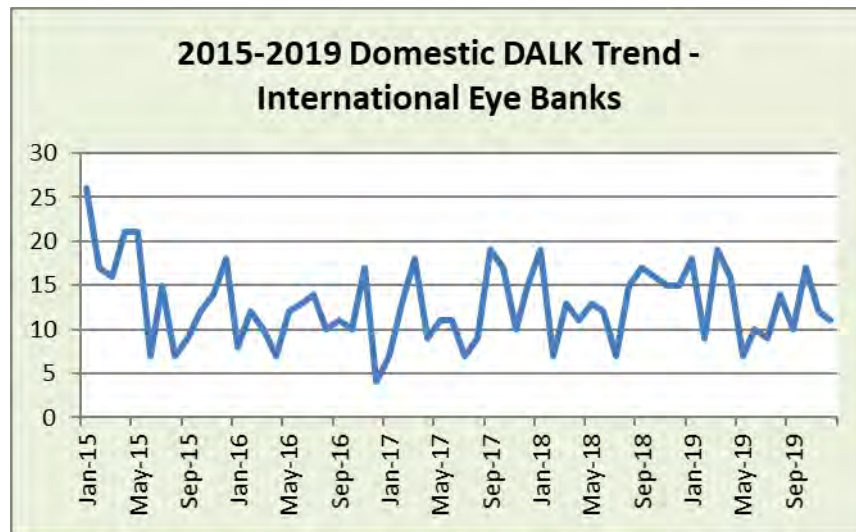
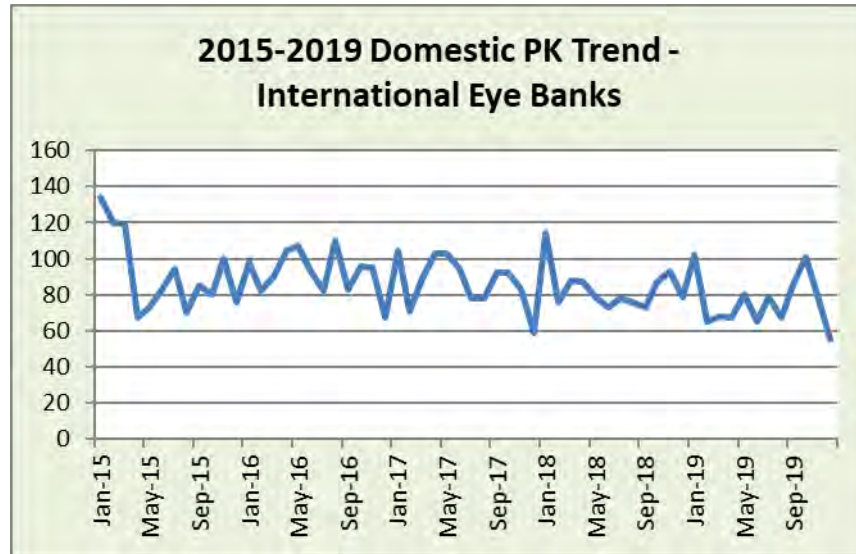
### Domestic Surgery Use of Intermediate-Term Preserved Tissue

Surgery Type (Domestically Distributed Corneas) - International Eye Banks												
Month	PK	EK (DSEK)	EK (DMEK)	EK (Other)	ALK (DALK)	ALK (SALK)	ALK (Other)	KLA	K-Pro	Shunt Patch	Other	Unknown
Jan. 2019	30.9%	27.9%	24.2%	0.0%	5.5%	0.0%	0.0%	0.0%	0.9%	7.3%	0.0%	3.3%
Feb. 2019	23.6%	32.7%	29.8%	0.0%	3.3%	0.4%	0.0%	0.0%	1.5%	3.6%	0.0%	5.1%
Mar. 2019	23.1%	33.2%	22.4%	0.0%	6.4%	0.3%	0.0%	0.3%	0.3%	3.1%	0.0%	10.8%
Apr. 2019	22.5%	33.6%	20.1%	0.0%	5.4%	1.0%	1.0%	0.0%	1.0%	8.7%	0.0%	6.7%
May 2019	23.7%	30.6%	25.5%	0.0%	2.1%	1.2%	0.3%	0.0%	0.3%	6.2%	0.0%	10.1%
Jun. 2019	22.3%	33.7%	18.6%	0.0%	3.4%	0.7%	0.7%	0.0%	0.3%	11.0%	0.0%	9.3%
Jul. 2019	28.5%	33.2%	20.9%	0.0%	3.2%	0.7%	0.0%	0.0%	0.4%	8.7%	0.0%	4.3%
Aug. 2019	26.1%	34.2%	17.9%	0.0%	5.4%	0.8%	0.4%	0.0%	0.4%	7.0%	0.0%	7.8%
Sep. 2019	27.7%	32.2%	24.1%	0.0%	3.2%	0.0%	0.0%	0.6%	0.0%	6.8%	0.0%	5.5%
Oct. 2019	31.1%	26.8%	24.6%	0.0%	5.2%	0.0%	0.6%	0.0%	0.0%	7.4%	0.0%	4.3%
Nov. 2019	23.3%	32.6%	25.4%	0.0%	3.6%	0.0%	0.3%	0.0%	0.6%	6.3%	0.3%	7.6%
Dec. 2019	25.1%	27.9%	27.4%	0.0%	5.0%	0.0%	0.0%	0.0%	0.5%	4.1%	0.0%	10.0%
<b>2015 Avg.</b>	35.7%	35.6%	12.4%	N/A	5.9%	0.0%	0.1%	0.3%	0.5%	7.7%	0.0%	1.8%
<b>2016 Avg.</b>	30.1%	33.7%	16.1%	N/A	3.5%	0.0%	0.2%	0.1%	0.7%	8.5%	0.1%	7.1%
<b>2017 Avg.</b>	31.8%	32.0%	18.7%	0.1%	4.4%	0.3%	0.3%	0.2%	0.3%	6.9%	0.1%	5.0%
<b>2018 Avg.</b>	28.4%	30.5%	21.0%	0.1%	4.5%	0.3%	0.3%	0.1%	0.3%	6.9%	0.2%	7.4%
<b>2019 Avg.</b>	25.7%	31.5%	23.4%	0.0%	4.3%	0.4%	0.3%	0.1%	0.5%	6.7%	0.0%	7.0%
<b>Std. Dev.</b>	3.2%	2.6%	3.6%	0.0%	1.3%	0.4%	0.3%	0.2%	0.4%	2.3%	0.1%	2.6%

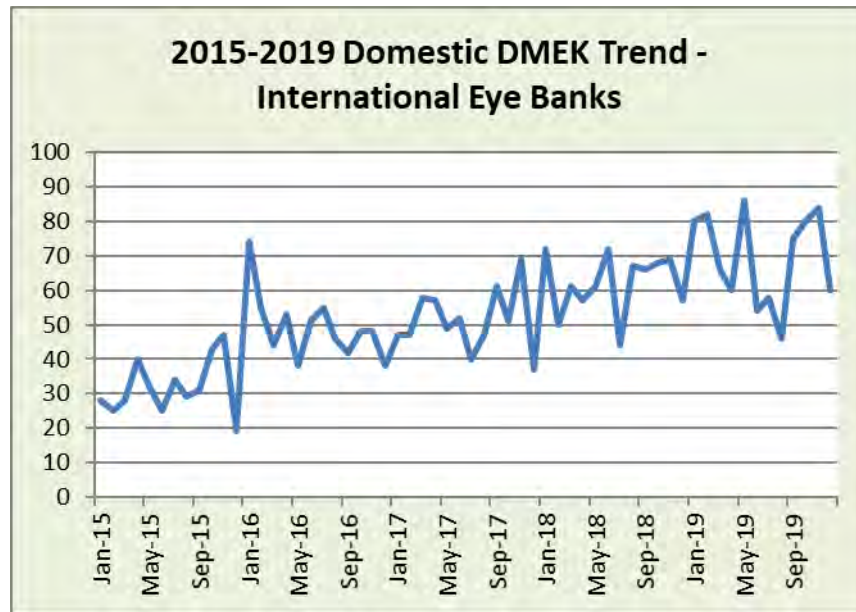
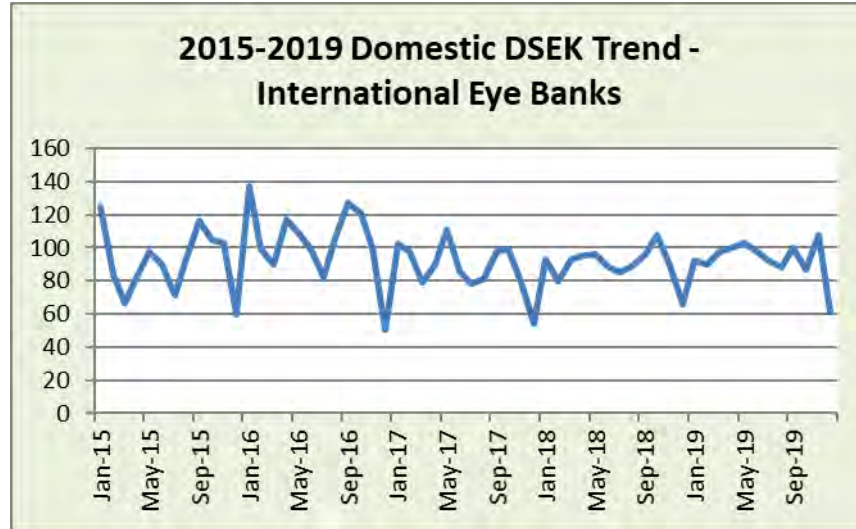
\*Percentages read from this table should be read as "of the tissue distributed for transplant use domestically"



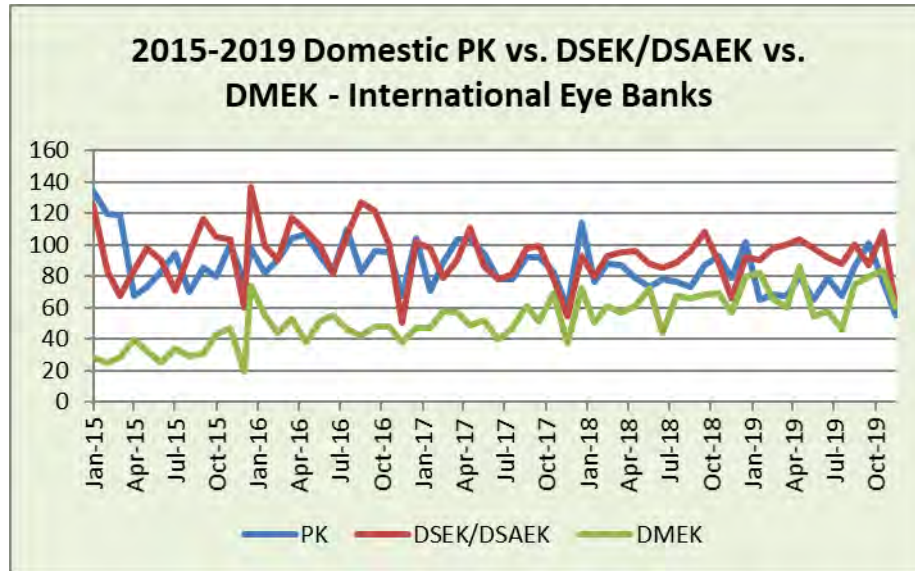
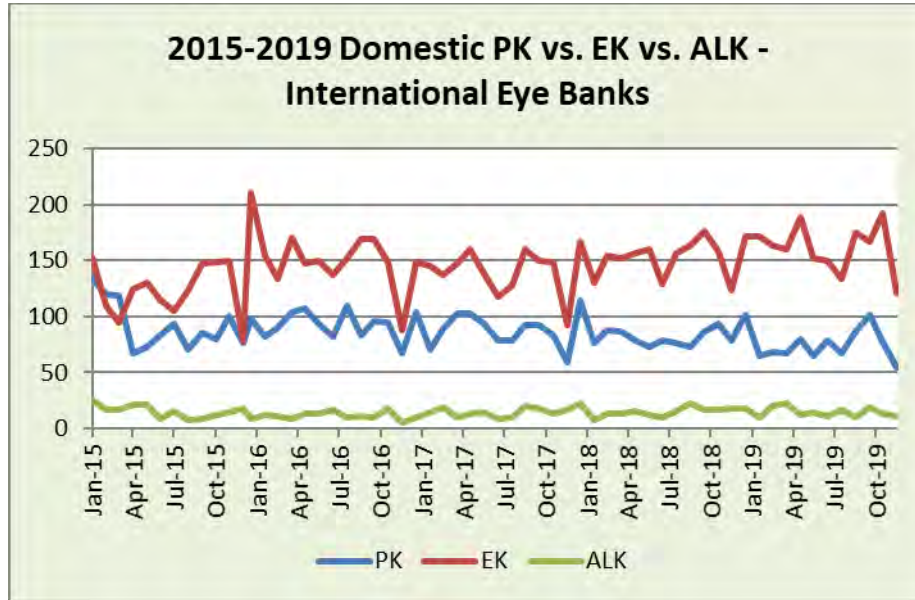
## 2019 International Eye Banking Statistics Trends of Domestic Use



## 2019 International Eye Banking Statistics Trends of Domestic Use



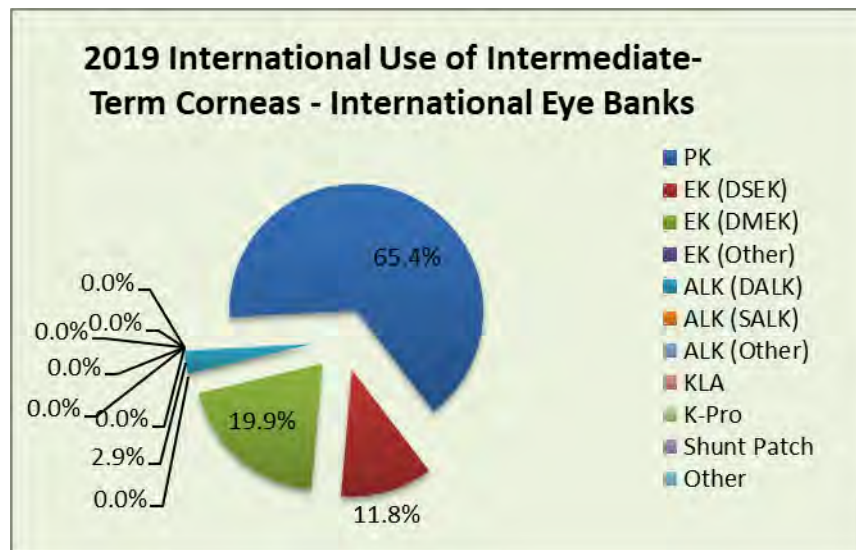
## 2019 International Eye Banking Statistics Domestic Surgery Use of Intermediate-Term Preserved Tissue



## 2019 International Eye Banking Statistics

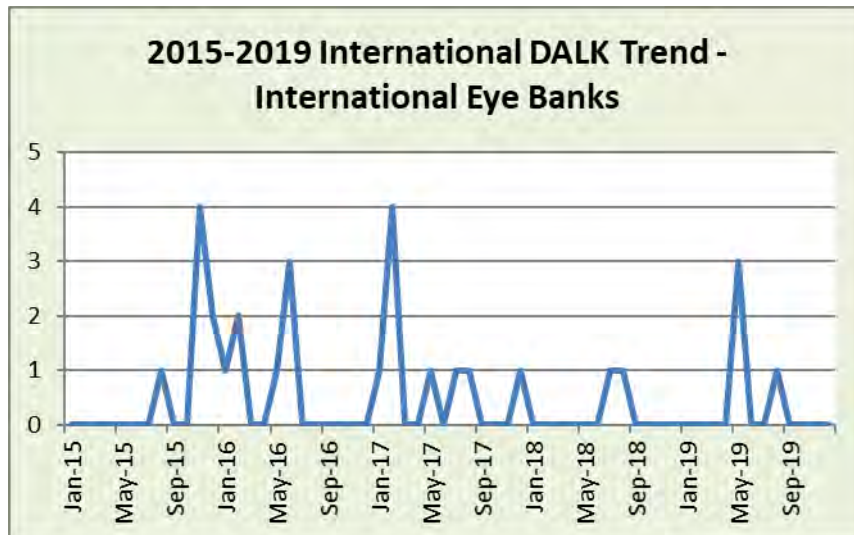
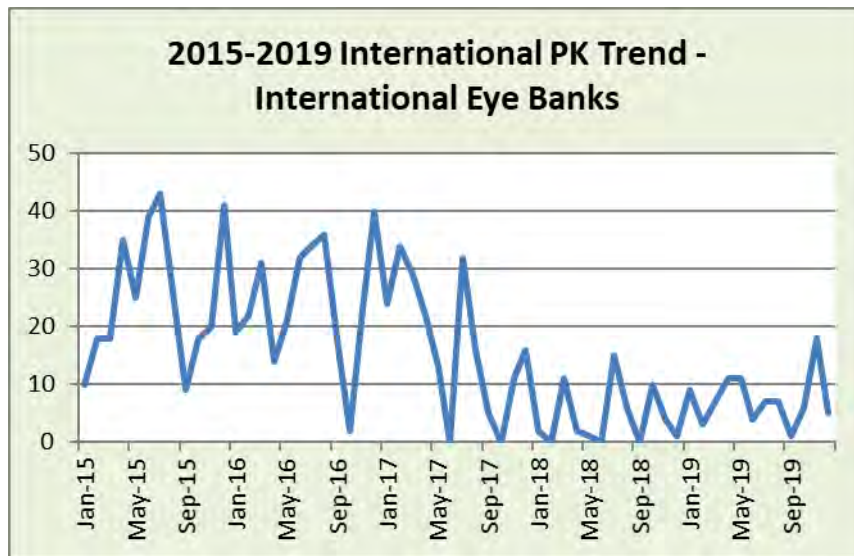
### International Surgery Use of Intermediate-Term Preserved Tissue

International Use of Intermediate-Term Corneas – International Eye Banks		
	2018	2019
Intermediate-term preserved corneas, corneal segments or whole eyes transplanted for:	<b>96</b>	<b>136</b>
PK	<b>52</b>	<b>89</b>
EK	<b>40</b>	<b>43</b>
DSEK, DSAEK, DLEK	16	16
DMEK or DMAEK	24	27
PDEK	0	0
Other EK	0	0
ALK	<b>2</b>	<b>4</b>
DALK (Deep Anterior Lamellar Keratoplasty)	2	4
SALK (Superficial Anterior Lamellar Keratoplasty)	0	0
Other ALK (e.g. peripheral, eccentric, etc.)	0	0
KLA	0	0
Keratoprosthesis (K-Pro)	0	0
Glaucoma shunt patch or other non-keratoplasty use	2	0
Other Keratoplasty (e.g. experimental surgery type)	0	0
Unknown or Unspecified	0	0
<b>Total intermediate-term preserved corneas, corneal segments, and whole eyes used for KERATOPLASTY</b>	<b>3,386</b>	<b>3,439</b>
<b>Total intermediate-term preserved corneas, corneal segments, and whole eyes used for TRANSPLANT</b>	<b>3,628</b>	<b>3,678</b>

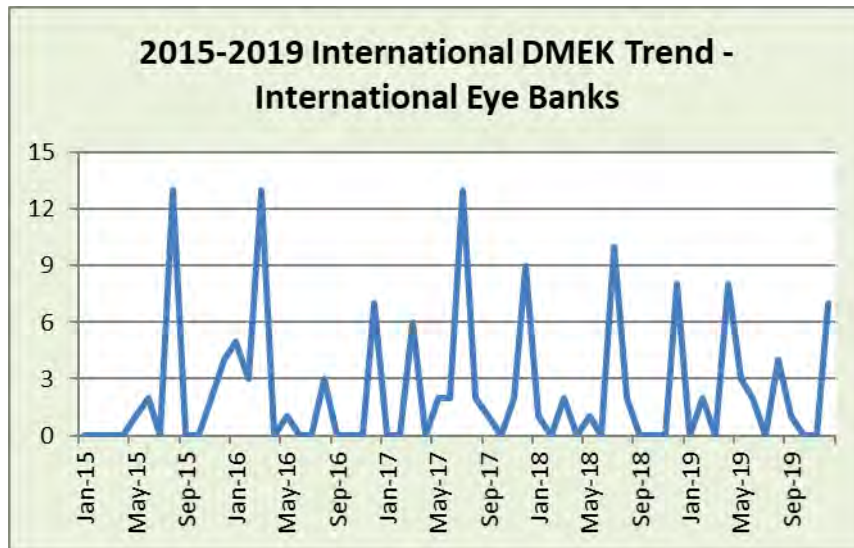
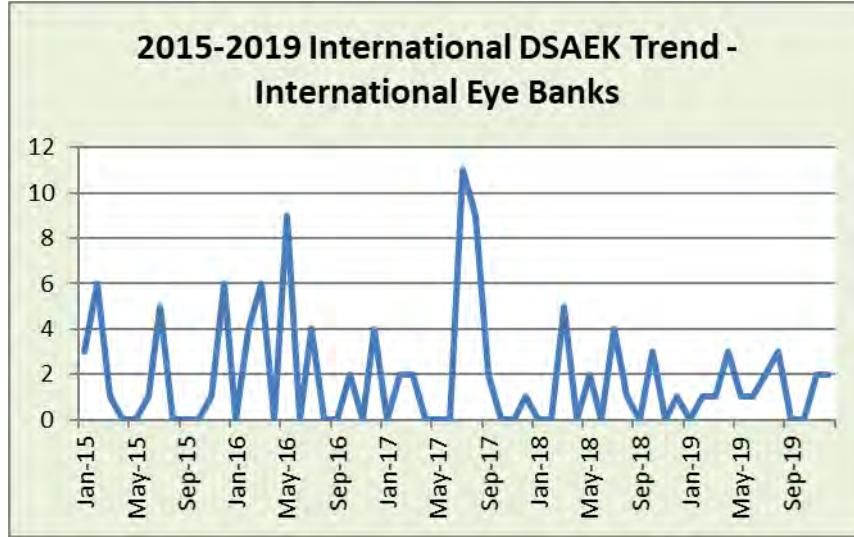


## 2019 International Eye Banking Statistics International Surgery Use of Intermediate-Term Preserved Tissue

Surgery Type (Internationally Distributed Corneas) - International Eye Banks												
Year	PK	EK (DSEK)	EK (DMEK)	EK (Other)	ALK (DALK)	ALK (SALK)	ALK (Other)	KLA	K-Pro	Shunt Patch	Other	Unknown
2013	227	73	0	0	9	0	1	0	3	0	0	23
2014	325	216	0	0	7	0	1	0	1	1	0	0
2015	302	23	22	0	7	0	0	0	0	1	0	61
2016	292	29	32	0	7	0	0	0	0	2	1	0
2017	202	27	37	0	9	0	0	0	0	1	0	0
2018	52	16	24	0	2	0	0	0	0	2	0	0
2019	89	16	27	0	4	0	0	0	0	0	0	0

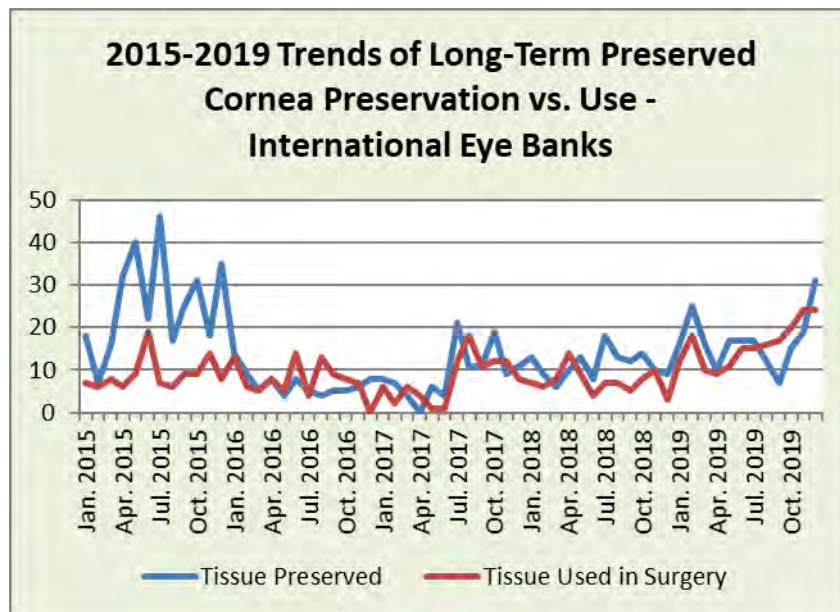


## 2019 International Eye Banking Statistics Trends of International Use



## 2019 International Eye Banking Statistics Long-Term Tissue Distribution

Long-Term Preserved Tissue Preservation and Distribution		
	2018	2019
Long-term preserved corneas or whole globes PRESERVED for transplant	135	202
Long-term preserved corneas, corneal segments, or whole globes DISTRIBUTED for:	88	191
Keratoplasty	3	13
Glaucoma Shunt patching	62	126
Other Surgical Uses	23	52
Long-term preserved corneas, corneal segments, or whole globes FORWARDED to another entity for final distribution	5	62
Sclera or sclera segments PRESERVED for transplantation	1,352	1,879
Sclera or sclera segments DISTRIBUTED for:	1,193	1,420
Prosthesis following enucleation	36	33
Glaucoma shunt patching	893	1,246
Other surgical uses	264	141
Sclera or sclera segments FORWARDED to another entity for final distribution	0	2



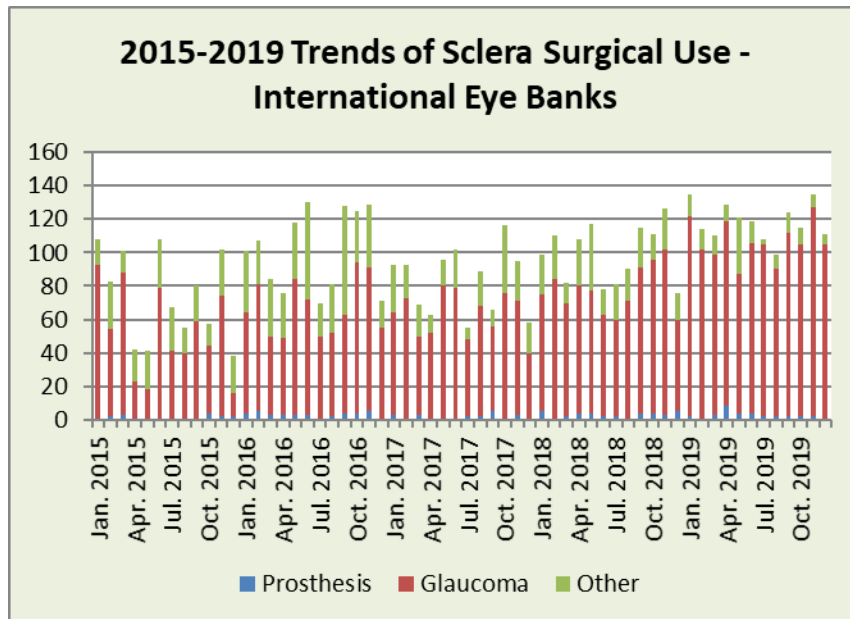
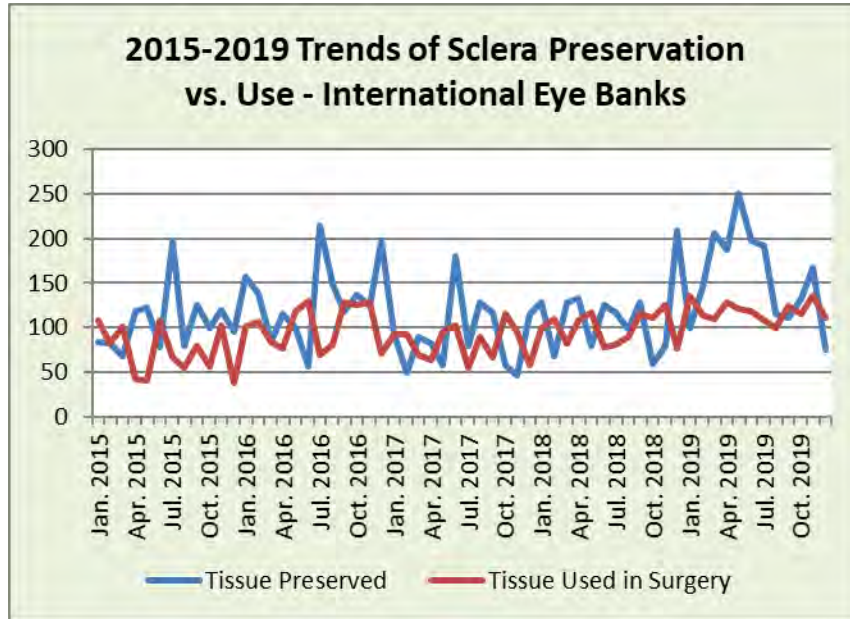
## 2019 International Eye Banking Statistics Long-Term Tissue Trends

Long-Term Tissue Trends - International Eye Banks								
Month	Long-Term Preserved Corneas	Long-Term Cornea Use - Keratoplasty	Long-Term Cornea Use - Glaucoma	Long-Term Cornea Use - Other	Scleral Segments Preserved	Sclera Use - Prosthesis	Sclera Use - Glaucoma	Sclera Use - Other
Jan. 2019	16	0	6	6	99	2	120	13
Feb. 2019	25	1	14	3	146	1	101	12
Mar. 2019	16	0	7	3	206	3	96	11
Apr. 2019	10	2	6	1	188	8	111	10
May 2019	17	1	7	3	251	4	83	34
Jun. 2019	17	2	9	4	198	4	102	13
Jul. 2019	17	3	12	0	191	2	103	3
Aug. 2019	12	0	13	3	115	2	88	9
Sep. 2019	7	0	15	2	111	2	110	12
Oct. 2019	15	0	14	6	132	2	103	10
Nov. 2019	19	2	6	16	167	2	125	8
Dec. 2019	31	2	17	5	75	1	104	6
<b>2015 Total</b>	<b>307</b>	<b>5</b>	<b>102</b>	<b>1</b>	<b>1,269</b>	<b>18</b>	<b>611</b>	<b>253</b>
<b>2016 Total</b>	<b>81</b>	<b>2</b>	<b>89</b>	<b>1</b>	<b>1,398</b>	<b>39</b>	<b>773</b>	<b>265</b>
<b>2017 Total</b>	<b>111</b>	<b>6</b>	<b>62</b>	<b>25</b>	<b>1,097</b>	<b>20</b>	<b>737</b>	<b>238</b>
<b>2018 Total</b>	<b>135</b>	<b>3</b>	<b>62</b>	<b>23</b>	<b>1,352</b>	<b>36</b>	<b>893</b>	<b>264</b>
<b>2019 Total</b>	<b>202</b>	<b>13</b>	<b>126</b>	<b>52</b>	<b>1,879</b>	<b>33</b>	<b>1246</b>	<b>141</b>
<b>2019 Avg.</b>	<b>17</b>	<b>1</b>	<b>11</b>	<b>4</b>	<b>157</b>	<b>3</b>	<b>104</b>	<b>12</b>
<b>Std. Dev.</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>52</b>	<b>2</b>	<b>12</b>	<b>8</b>

Ocular Tissue Used for Glaucoma Shunt Patching	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Long-Term Cornea	119	110	101	102	89	62	62	126	
Intermediate-Term Cornea	169	227	304	240	313	229	245	239	
Sclera	609	597	679	611	773	737	893	1246	

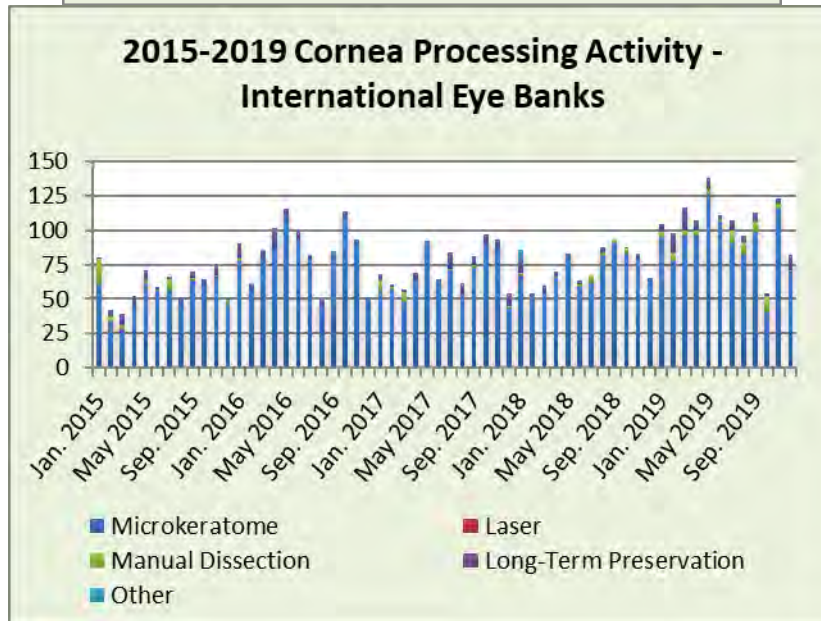
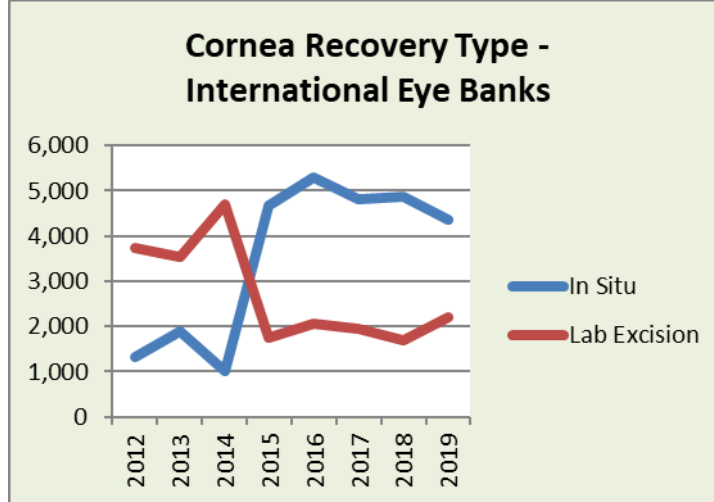


## 2019 International Eye Banking Statistics Long-Term Tissue Trends



## 2019 International Eye Banking Statistics Tissue Processing

Tissue Processing for Transplant – International Eye Banks		
	2018	2019
Eye Processing (does not include in situ excision)	1,687	2,191
Processed for corneal preservation only	1,280	1,422
Processed for sclera preservation	371	727
Processed for other ocular materials	36	42
Cornea Processing	900	1,250
Processed by microkeratome	841	1,093
Processed by laser	0	0
Processed by hand dissection	19	67
Processed by transfer into long-term preservation	31	90
Processed by other methods	9	0



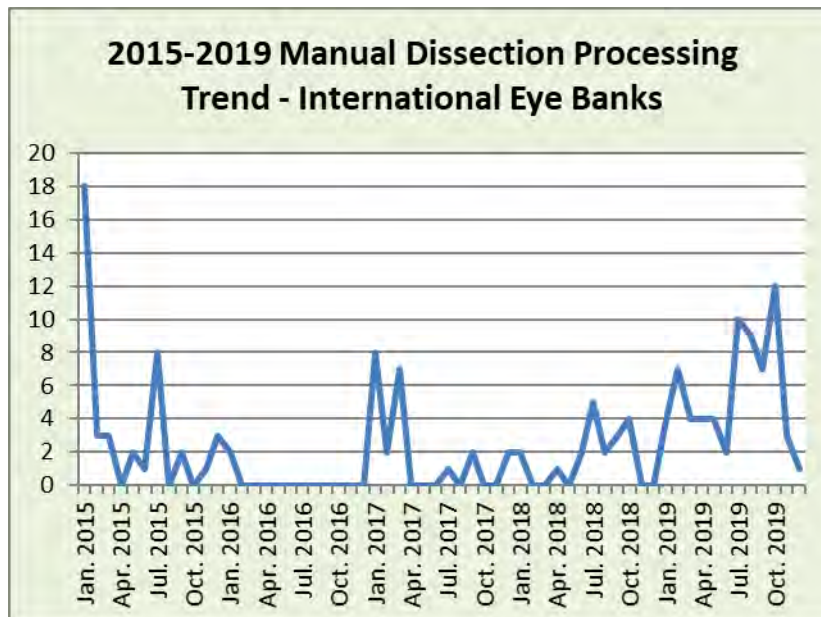
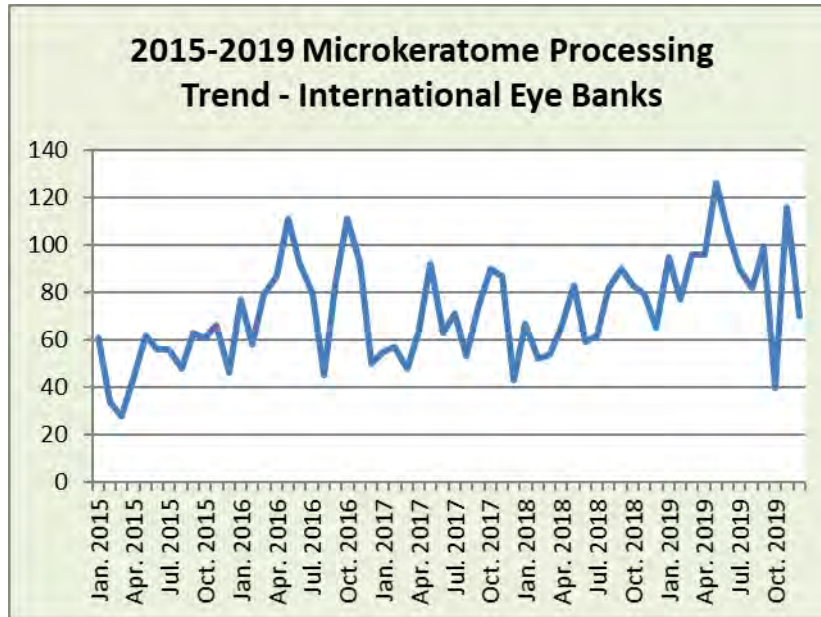
## 2019 International Eye Banking Statistics Tissue Processing

Cornea Processing - International Eye Banks					
Month	Processing - Microkeratome	Processing - Laser	Processing - Manual	Processing - Long-Term Preservation	Processing - Other
Jan. 2019	95	0	4	5	0
Feb. 2019	77	0	7	14	0
Mar. 2019	96	0	4	17	0
Apr. 2019	96	0	4	7	0
May 2019	126	0	4	8	0
Jun. 2019	106	0	2	3	0
Jul. 2019	90	0	10	7	0
Aug. 2019	82	0	9	5	0
Sep. 2019	99	0	7	7	0
Oct. 2019	40	0	12	2	0
Nov. 2019	116	0	3	4	0
Dec. 2019	70	0	1	11	0
<b>2015 Total</b>	626	0	41	52	0
<b>2016 Total</b>	864	0	2	57	6
<b>2017 Total</b>	796	0	22	64	0
<b>2018 Total</b>	841	0	19	31	9
<b>2019 Total</b>	1,093	0	67	90	0
<b>2019 Avg.</b>	91	0	6	8	0
<b>Std. Dev.</b>	22	0	3	4	0

Cornea Processing Success Rates - International Eye Banks									
	2012	2013	2014	2015	2016	2017	2018	2019	Trends
Processing Events	556	451	664	719	929	882	900	1,250	
Failed Processing	53	55	64	49	66	55	60	65	
Success Rate	90.5%	87.8%	90.4%	93.2%	92.9%	93.8%	93.3%	94.8%	

Cornea Recovery Methods - International Eye Banks									
	2012	2013	2014	2015	2016	2017	2018	2019	Trends
In Situ	1,327	1,897	1,024	4,667	5,283	4,813	4,872	4,360	
Lab Excision	3,731	3,530	4,702	1,736	2,050	1,940	1,687	2,191	

## 2019 International Eye Banking Statistics Tissue Processing



## 2019 International Eye Banking Statistics Indications for Corneal Transplant

Indications for Penetrating Keratoplasty 2018	Domestic Use		International Use	
A. Post-cataract surgery edema	77	8.4%	16	18.0%
B. Ectasias/Thinnings	104	11.4%	9	10.1%
C. Endothelial Dystrophies	42	4.6%	2	2.2%
D. Repeat Corneal Transplant	259	28.4%	13	14.6%
E. Other degenerations or dystrophies	32	3.5%	1	1.1%
F. Refractive	0	0.0%	0	0.0%
G. Microbial keratitis	105	11.5%	4	4.5%
H. Mechanical or chemical trauma	49	5.4%	0	0.0%
I. Congenital opacities	13	1.4%	0	0.0%
J. Pterygium	0	0.0%	0	0.0%
K. Non-infectious ulcerative keratitis or perforation	51	5.6%	0	0.0%
L. Other causes of corneal dysfunction or distortion (non-endothelial)	41	4.5%	3	3.4%
M. Other causes of endothelial dysfunction	53	5.8%	1	1.1%
Z. Unknown, unreported, or unspecified	86	9.4%	40	44.9%
<b>Total Indications for Penetrating Keratoplasty</b>	<b>912</b>		<b>89</b>	

Indications for Anterior Lamellar Keratoplasty	Domestic Use		International Use	
B. Ectasias/Thinnings	72	40.7%	2	50.0%
D. Repeat Corneal Transplant	16	9.0%	0	0.0%
E. Other degenerations or dystrophies	18	10.2%	0	0.0%
F. Refractive	0	0.0%	0	0.0%
G. Microbial keratitis	15	8.5%	0	0.0%
H. Mechanical or chemical trauma	4	2.3%	0	0.0%
I. Congenital opacities	7	4.0%	0	0.0%
J. Pterygium	1	0.6%	0	0.0%
K. Non-infectious ulcerative keratitis or perforation	6	3.4%	0	0.0%
L. Other causes of corneal dysfunction or distortion	15	8.5%	0	0.0%
Z. Unknown, unreported, or unspecified	23	13.0%	2	50.0%
<b>Total for Anterior Keratoplasty</b>	<b>177</b>		<b>4</b>	

Indications for Endothelial Keratoplasty	Domestic Use		International Use	
A. Post-Cataract Surgery Edema	402	20.6%	22	51.2%
C. Endothelial Dystrophies	805	41.3%	3	7.0%
D. Repeat Corneal Transplant	243	12.5%	6	14.0%
M. Other Causes of Endothelial Dysfunction	85	4.4%	3	7.0%
Z. Unknown, unreported, or unspecified	413	21.2%	9	20.9%
<b>Total for Endothelial Keratoplasty</b>	<b>1,948</b>		<b>43</b>	

## 2019 International Eye Banking Statistics Indications for Corneal Transplant

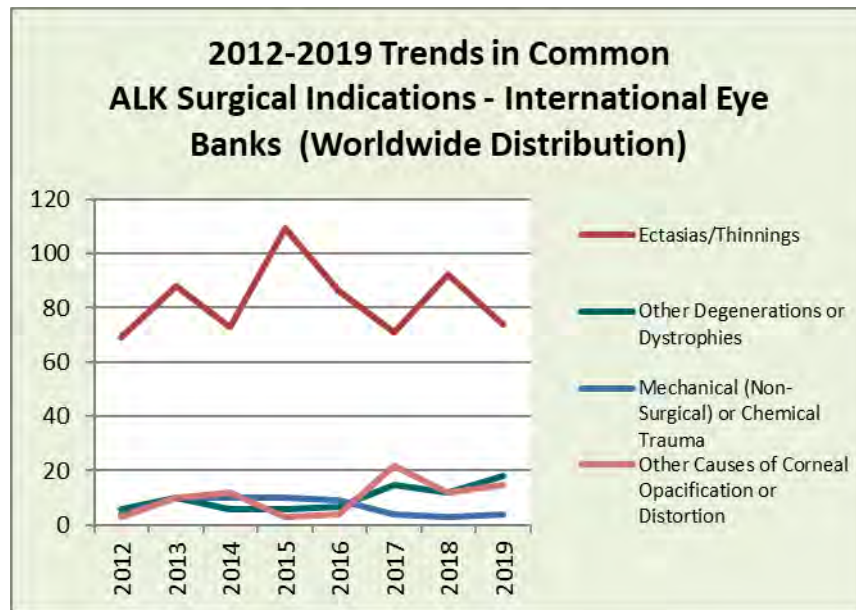
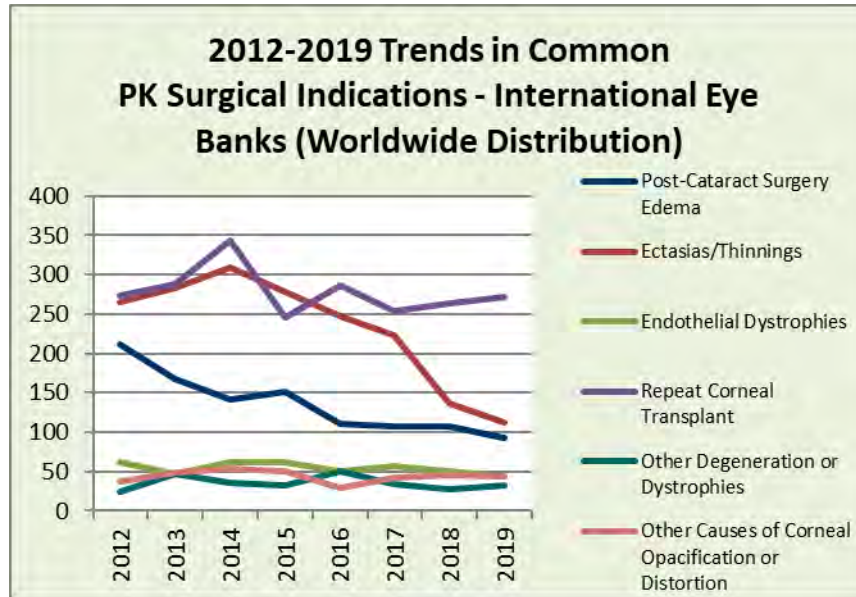
**2019 Indications for Penetrating Keratoplasty -  
International Eye Banks (Domestic Distribution)**



**2019 Indications for Penetrating Keratoplasty -  
International Eye Banks (International Distribution)**



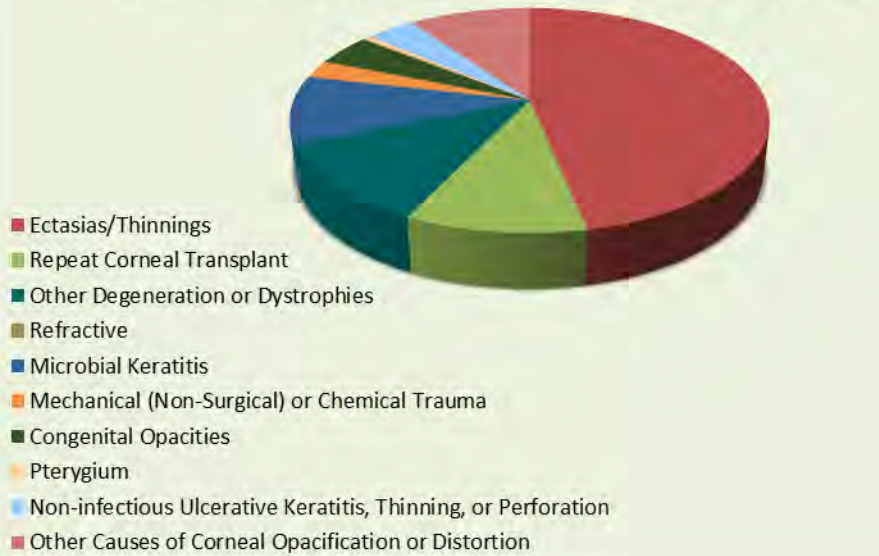
## 2019 International Eye Banking Statistics Indications for Corneal Transplant



\*Worldwide Distribution = Combined Domestic and International Distribution

## 2019 International Eye Banking Statistics Indications for Corneal Transplant

**2019 Indications for Anterior Lamellar Keratoplasty  
- International Eye Banks (Domestic Distribution)**



**2019 Indications for Anterior Lamellar Keratoplasty  
- International Eye Banks (International Distribution)**





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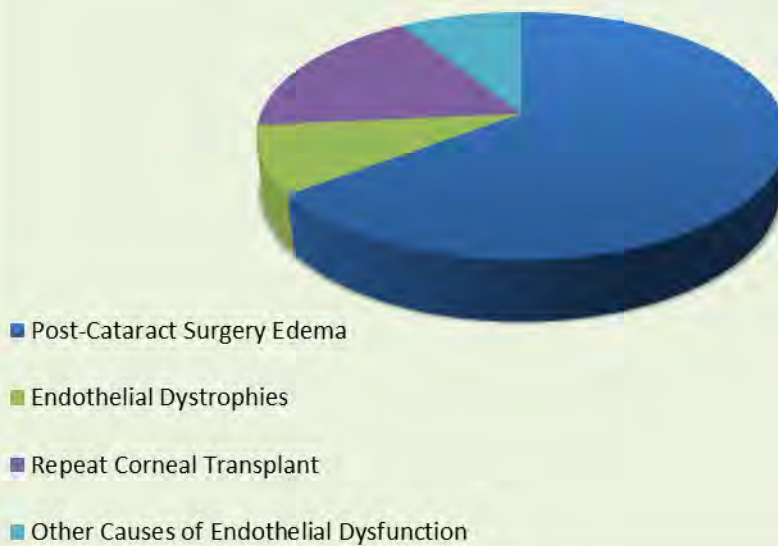
## 2019 International Eye Banking Statistics Indications for Corneal Transplant

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**2019 Indications for Endothelial Keratoplasty -  
International Eye Banks (Domestic Distribution)**



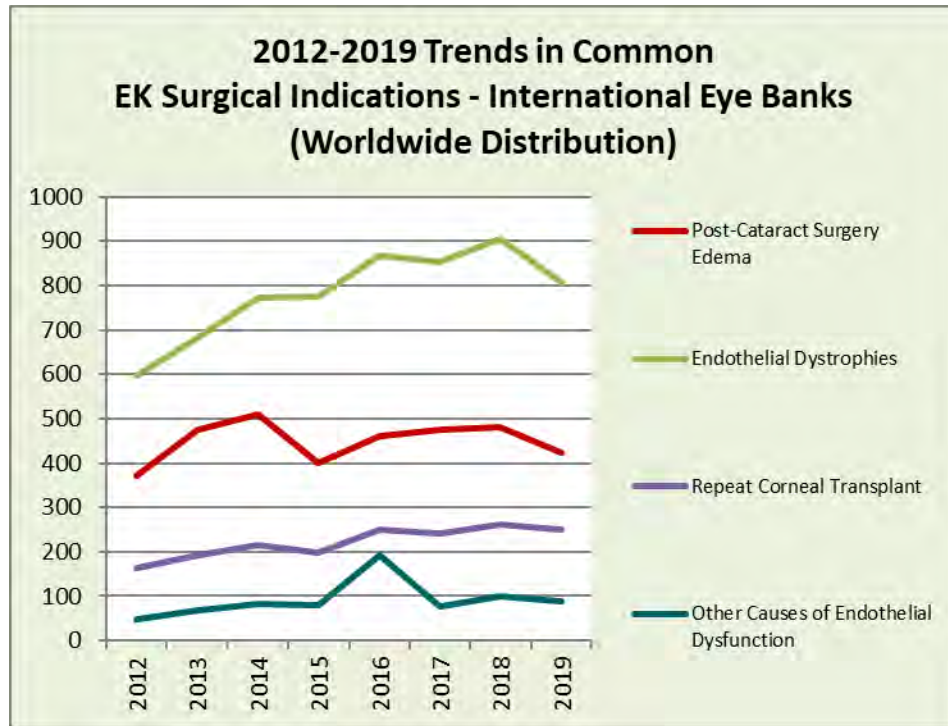
**2019 Indications for Endothelial Keratoplasty -  
International Eye Banks (International Distribution)**



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## 2019 International Eye Banking Statistics Indications for Corneal Transplant

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**\*Worldwide Distribution = Combined Domestic and International Distribution**

## 2019 International Eye Banking Statistics Indications for Corneal Transplant

2019 (Domestically Distributed Corneas Only) - International Eye Banks														
	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
PK	77	104	42	259	32	0	105	49	13	0	51	41	53	86
EK	402		805	243									85	413
ALK		72		16	18	0	15	4	7	1	6	109		23

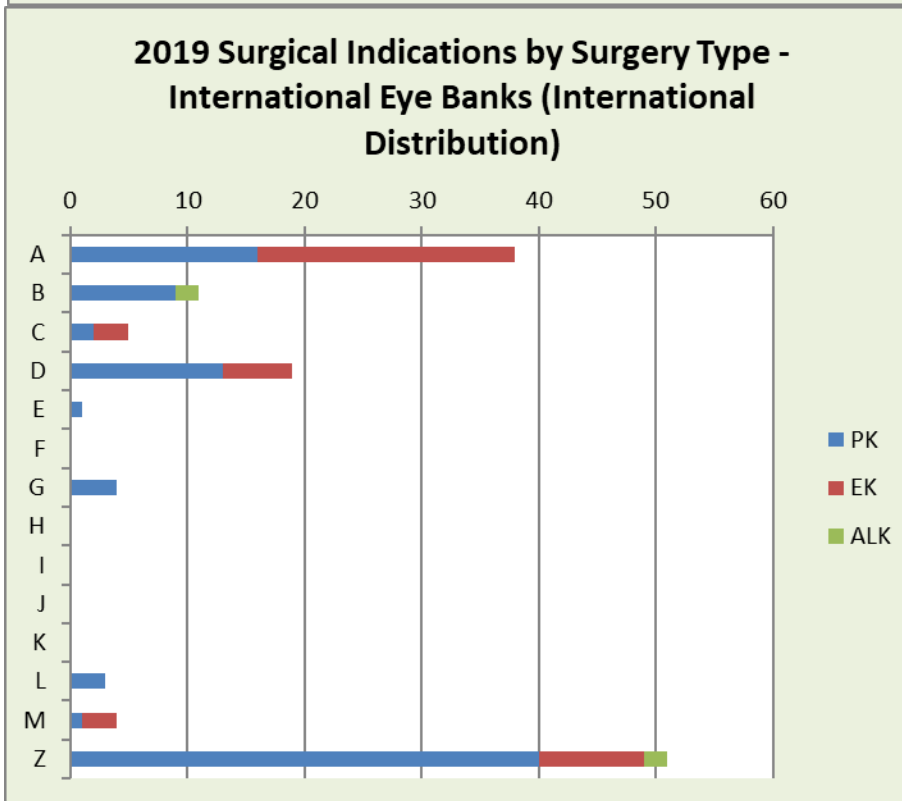
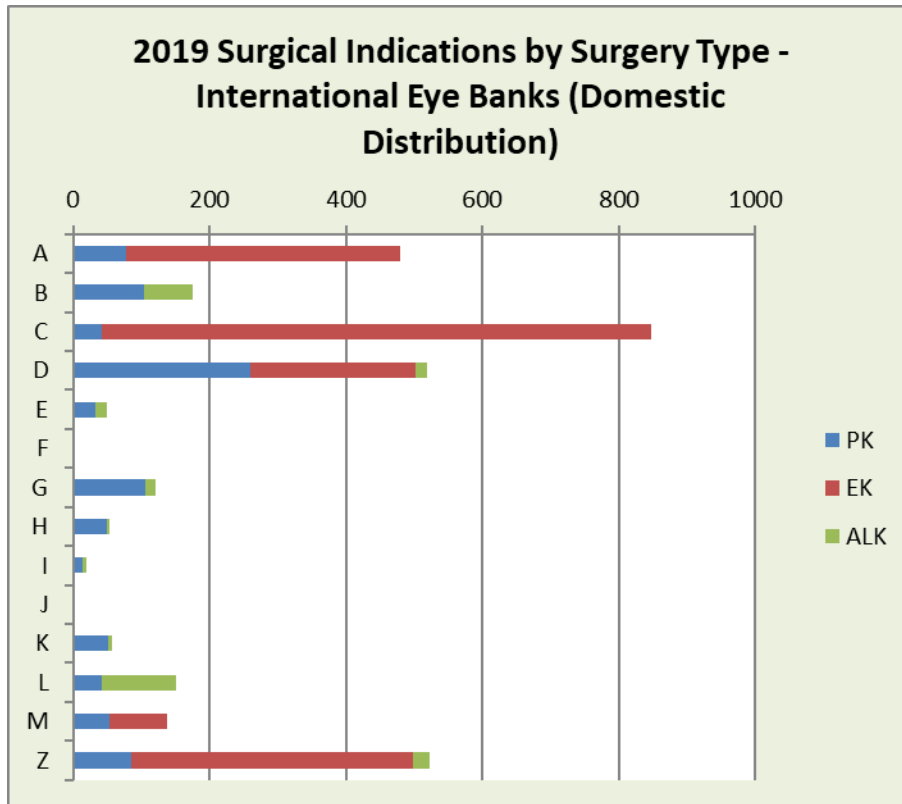
2019 (Internationally Distributed Corneas Only) - International Eye Banks														
	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
PK	16	9	2	13	1	0	4	0	0	0	0	3	1	40
EK	22		3	6									3	9
ALK		2		0	0	0	0	0	0	0	0	0		2

2019 (Combined Domestic & International Distributed Corneas) - International Eye Banks														
	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
PK	93	113	44	272	33	0	109	49	13	0	51	44	54	126
EK	424		808	249									88	422
ALK		74		16	18	0	15	4	7	1	6	15		25

\*Worldwide Distribution = Combined Domestic and International Distribution

- A - Post-Cataract Surgery Edema
- B - Ectasias/Thinning
- C - Endothelial Dystrophies
- D - Repeat Corneal Transplant
- E - Other Degeneration or Dystrophies
- F - Refractive
- G - Microbial Keratitis
- H - Mechanical (Non-Surgical) or Chemical Trauma
- I - Congenital Opacities
- J - Pterygium
- K - Non-infectious Ulcerative Keratitis, Thinning, or Perforation
- L - Other Causes of Corneal Opacification or Distortion
- M - Other Causes of Endothelial Dysfunction
- Z - Unknown or Unreported

## 2019 International Eye Banking Statistics Indications for Corneal Transplant



## Eye Banks Submitting Data for the 2019 Eye Banking Statistical Report

STATE	EYE BANK NAME	CITY
AL	Advancing Sight Network	Birmingham
AR	Arkansas Lions Eye Bank & Laboratory	Little Rock
AZ	Donor Network of Arizona	Phoenix
CA	One Legacy	Los Angeles
	San Diego Eye Bank	San Diego
	Sierra Donor Services Eye Bank	West Sacramento
CO	Rocky Mountain Lions Eye Bank	Aurora
FL	Florida Lions Eye Bank	Miami
	Lions Eye Institute for Transplantation and Research	Tampa
GA	Georgia Eye Bank	Atlanta
HI	Hawaii Lions Eye Bank & Makana Foundation	Honolulu
IA	Iowa Lions Eye Bank	Coralville
ID	Envision	Boise
IN	VisionFirst	Indianapolis
KS	Kansas Eye Bank & Cornea Research Center	Wichita
KY	Kentucky Lions Eye Bank	Louisville
LA	Baton Rouge Regional Eye Bank	Baton Rouge
	Southern Eye Bank	Metairie
MD	KeraLink Corporate (now merged with CorneaGen)	Baltimore
MI	Eversight Corporate	Ann Arbor
MN	Lions Gift of Sight	Minneapolis
MO	Mid-America Transplant	St. Louis
	Saving Sight	Columbia
MS	Mississippi Lions Eye Bank	Flowood
NC	LifeShare Carolinas	Charlotte
	Miracles in Sight.	Winston-Salem
NE	Lions Eye Bank of Nebraska, Inc.	Omaha
NV	Nevada Donor Network, Inc.	Las Vegas
NY	ConnectLife	Syracuse
	Sight Society of Northeastern New York	Albany
	The Lions Eye Bank for Long Island	Valley Stream
	The Eye-Bank for Sight Restoration	New York
	ConnectLife.	Williamsville
OH	Central Ohio Lions Eye Bank, Inc.	Columbus
	Cincinnati Eye Bank for Sight Restoration, Inc.	Cincinnati
	Lions Eye Bank of West Central Ohio	Dayton
OK	Oklahoma Lions Eye Bank	Oklahoma City
OR	Lions VisionGift	Portland

STATE	EYE BANK NAME	CITY
PA	Center for Organ Recovery & Education (CORE)	Pittsburgh
	Gift of Life Donor Program Eye Bank	Hershey
	Lions Eye Bank of Delaware Valley	Philadelphia
	Lions Eye Bank of Northwest Pennsylvania, Inc.	Erie
PR	Lions Eye Bank of Puerto Rico	San Juan
SD	Dakota Lions Sight and Health	Sioux Falls
TN	East Tennessee Lions Eye Bank, Inc.	Knoxville
	Mid-South Eye Bank for Sight Restoration, Inc.	Memphis
TX	Great Plains Lions Eye Bank, Inc.	Lubbock
	Lions Eye Bank of Texas at Baylor College of Medicine	Houston
	Lone Star Lions Eye Bank	Manor
	Transplant Services Center, UT Southwestern Medical Center	Dallas
	Western Texas Lions Eye Bank Alliance	San Angelo
UT	Utah Lions Eye Bank	Murray
VA	Lions Medical Eye Bank & Research Center of Eastern VA, Inc.	Norfolk
	Old Dominion Eye Foundation, Inc.	Richmond
WA	SightLife Corporate	Seattle
WI	Lions Eye Bank of Wisconsin	Madison
WV	Medical Eye Bank of West Virginia	Charleston

COUNTRY	EYE BANK NAME	CITY
Canada	Lions Eye Bank	Calgary, AB
	Eye Bank of British Columbia	Vancouver, BC
	Misericordia Eye Bank	Winnipeg, MB
	New Brunswick Organ and Tissue Program- Ocular Division	Saint John, NB
	Regional Tissue Bank	Halifax, NS
	Eye Bank of Canada, Ontario Division	Toronto, ON
	Eye Bank of Saskatchewan	Saskatoon, SK
China	Daqing Eye Bank	Daqing
Germany	Hornhautbank Munich gGmbH	Munich
Hong Kong	Hospital Authority Eye Bank	Kowloon
Japan	Cornea Center & Eye Bank	Ichikawa City