



2016 EYE BANKING STATISTICAL REPORT

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Table of Contents

Statistical Report Analysis: Surgical Use and Indications for Corneal Transplant, 2016	3
Statistics from United States Eye Banks	
Referral Trends, Transplant and Conversion Rates	13
Donor Demographics	18
Eligibility and Suitability for Tissue Intended for Surgery	21
Reasons Released Tissues Were Not Transplanted	29
Outcomes of Tissue Recovered For Transplant	30
Use of Donated Tissue	32
Annual Comparison of the Number of Corneal Transplants Supplied by U.S. Banks	33
Domestic Surgery Use of Intermediate-Term Preserved Tissue	34
Annual Comparison of the Domestic Use of U.S. Supplied Intermediate-Term Preserved Tissue	38
International Use of Intermediate-Term Preserved Tissue	40
Long-Term Preserved Tissue Preservation and Distribution	44
Tissue Processing for Transplant	47
Forwarded Tissue	50
Indications for Corneal Transplant	51
Statistics from International Eye Banks	
Referral Trends, Transplant and Conversion Rates	59
Donor Demographics	63
Eligibility and Suitability for Tissue Intended for Surgery	66
Reasons Released Tissues Were Not Transplanted	73
Outcomes of Tissue Recovered For Transplant	74
Use of Donated Tissue	76
Domestic Surgery Use of Intermediate-Term Preserved Tissue	77
International Use of Intermediate-Term Preserved Tissue	81
Long-Term Preserved Tissue Preservation and Distribution	85
Tissue Processing for Transplant	88
Forwarded Tissue	91
Indications for Corneal Transplant	92
Eye Banks Submitting Data for the 2016 Statistical Report	98

Surgical Use and Indications for Corneal Transplant Statistical Report Analysis – 2016

Introduction:

The 2016 Eye Banking Statistical Report from the Eye Bank Association of America (EBAA) includes information on all 62 U.S. and 11 international member eye banks reporting data for the calendar year 2016, and represents an essentially complete picture of eye banking activity of all the eye banks in the United States. The total number of eye banks reporting in the United States (U.S.) dropped from 71 to 62 in 2016 due to mergers and separate eye banks that report under a single corporate entity. In the U.S., there are 86 different eye banks that report as 62 corporate entities.

Utilization of Tissue:

The 62 domestic eye banks in 2016 reported 69,049 total donors (3.8% increase over 2015) and 136,318 total eyes/corneas donated (4.18% increase over 2015). Please see Table 1 below for additional details on donations and distribution. Intermediate-term preserved corneas, by far the largest category, included all refrigerated tissue stored in Optisol GS™, Life4°C™, or Eusol C™ used for full thickness and lamellar procedures.

Table 1: Total Donations and Distribution of Tissue in 2016

Donations	2016	2015	% Change
Eye Banks Reported	62	71	(-12.7%)
Total Whole Globes and Corneas Donated	136,318	130,987	4.1%
Total Number of Donors	69,049	66,526	3.8%
Distribution	2016	2015	% Change
Intermediate-Term Preserved Corneas	75,926	74,623	1.7%
Sclera	3,380	3,225	4.8%
Long-Term Preserved Corneas	18,133	11,672	55.4%
Research	17,023	16,924	0.6%
Training	9,916	10,003	(-0.9%)

Utilization of tissue supplied by U.S. eye banks is shown below in Table 2. This table includes all tissue supplied by domestic eye banks whether used domestically or internationally. Total grafts increased to 82,994 in 2016, up 4.7%. Penetrating keratoplasty (PK) decreased 2.9% in 2016 to 38,413. Tissue used for endothelial keratoplasty (EK) in 2016 (32,221) increased 4.9% from 30,710 in 2015. There was an 8.4% increase in tissue used for lamellar keratoplasty (ALK) from 2,201 in 2015 to 2,386 in 2016. The number of corneas used for keratolimbic allograft (KLA) decreased 9.3% from 107 in 2015 to 97 in 2016. Corneas used for keratoprosthesis decreased 14% from 364 in 2015 to 313 in 2016. The number of corneas used for ALK, keratolimbic allografts and keratoprosthesis procedures remain relatively small: these three procedures combined made up just 3.4% of total grafts in 2016 (see below).

Table 2: Utilization of Tissue from U.S. Eye Banks

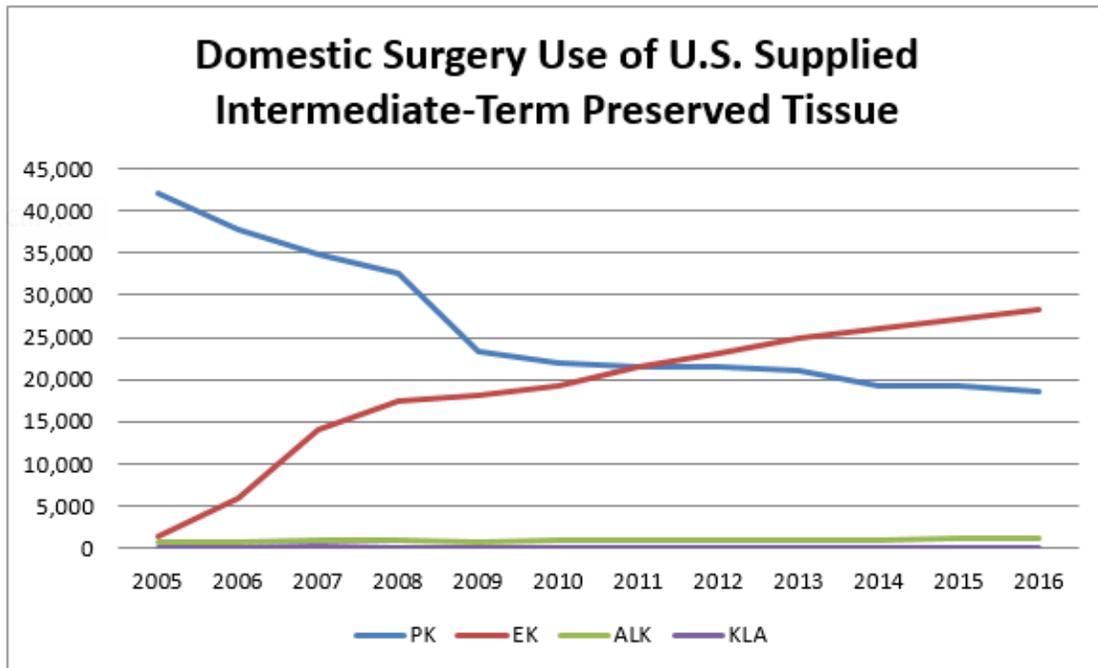
Distribution	2016	2015	2014	2013	2012
Corneal Grafts Total	82,994	79,304	76,431	72,736	68,681
Penetrating Keratoplasty	38,413	39,554	38,919	36,998	36,716
Anterior Lamellar Keratoplasty	2,386	2,201	1,953	2,009	1,855
Endothelial Keratoplasty	32,221	30,710	28,961	27,298	24,277
Keratolimb Allograft	97	107	88	110	97
Keratoprosthesis (K-Pro)	313	364	294	255	263
Glaucoma Shunt Patch or other non-keratoplasty use	917	527	755	687	676
Other keratoplasty (experimental surgery)	65	19	17	17	44
Unknown or Unspecified	1,514	1,142	1,026	1,068	1,554
Sclera	3,380	3,225	3,345	3,693	3,497
Long-Term Preserved Corneas	18,133	11,672	7,223	4,840	5,095
Keratoplasty	1,335	737	938	499	305
Glaucoma Shunt Patching	16,683	10,843	6,212	4,040	4,435
Other Surgical Uses	115	92	73	301	335
Research	17,023	16,924	17,670	17,384	19,320
Training	9,916	10,003	9,295	7,451	6,850

Table 3 (below) shows that the number of penetrating grafts utilizing intermediate-term preserved tissue performed in the U.S. decreased in each of the past 12 years, from 42,063 in 2005 to 18,579 in 2016, a 56% decrease over all. The number of corneas used domestically for endothelial keratoplasty (28,327) increased 4.1% in 2016, following a 4.8% increase in 2015 and a 3.9% increase in 2014. Endothelial keratoplasty has been the most commonly performed keratoplasty procedure in the United States for the last five years and continues to increase. ALK procedures increased slightly, but both KLA and K-Pro procedures declined in the U.S. in 2016.

**Table 3: Domestic Use of Intermediate-Term Preserved Tissues
Annual Comparison 2005 - 2016**

Domestic Surgery Use	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Penetrating Keratoplasty	42,063	37,776	34,806	32,524	23,269	21,970	21,620	21,422	20,954	19,294	19,160	18,579
Endothelial Keratoplasty	1,398	6,027	14,159	17,468	18,221	19,159	21,555	23,049	24,987	25,965	27,208	28,327
Anterior Lamellar Keratoplasty	641	806	950	1,072	774	1,041	932	883	951	914	1,115	1,232
Keratolimb Allograft	175	138	207	173	120	130	69	80	91	80	97	82
KPRO					222	342	332	236	223	260	323	279

Figure 1: 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 11 years can be seen above in Figure 1: Domestic PK vs. EK vs. ALK Surgery Trends. This figure shows that endothelial keratoplasty has been the most common keratoplasty procedure in the U.S. for the last five years. Figure 1 also shows the low number of DALK procedures which have been relatively flat over the past 12 years compared to other keratoplasty procedures.

The figures below track the number of DSAEK and DMEK procedures on a monthly basis and show the increase in DMEK procedures starting in 2012. Figure 2: Domestic DSAEK Trends shows relatively flat numbers for DSAEK over the past six years. Figure 3: Domestic DMEK Trends shows an increase in DMEK numbers accounting for the continued upslope of endothelial keratoplasty in Figure 1 above. DMEK is taking off in 2016 like DSAEK did in 2005.

Table 4 below shows that while there was a slight decrease in DSAEK numbers in each of the past three years, DMEK increased 64% in 2015 and 37.6% in 2016. Because of the increase in DMEK, the endothelial keratoplasty numbers continue to increase each year

Figure 2: Domestic DSEK Trends

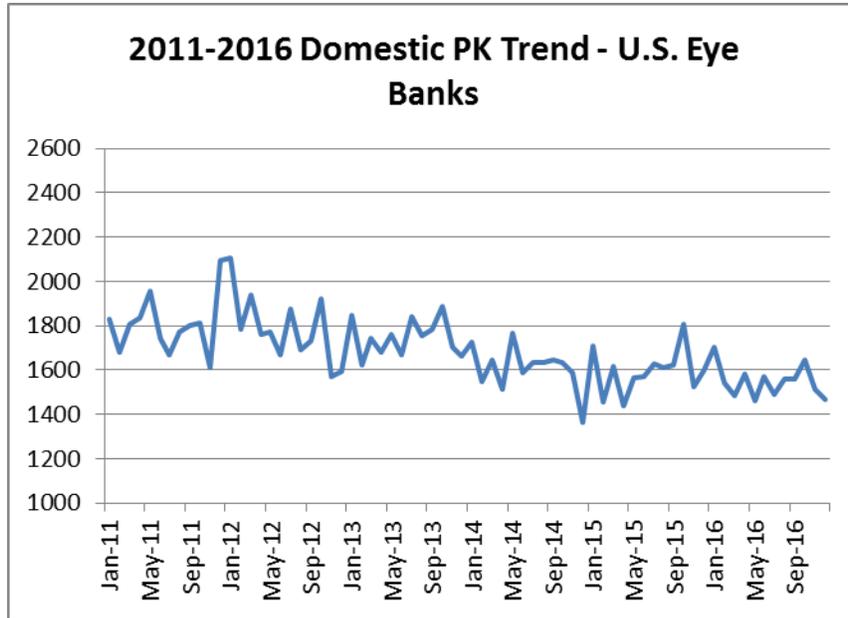
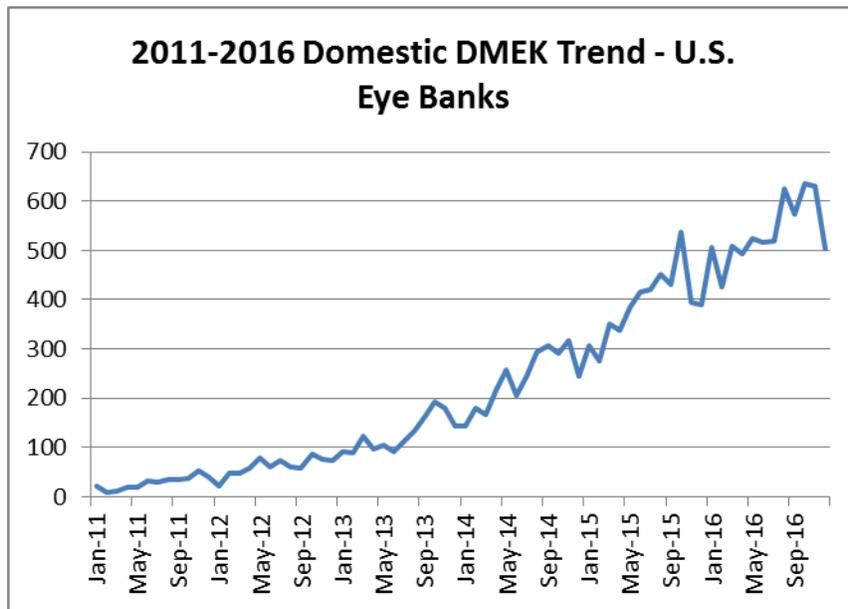


Figure 3: Domestic DMEK Trends



**Table 4: Domestic Endothelial Keratoplasty Numbers
Annual Comparison 2012 - 2016**

Domestic Surgery Use	2016	2015	2014	2013	2012
Total Endothelial Keratoplasty Procedures	28,327	27,208	25,965	24,987	23,049
DSEK, DSAEK, DLEK Procedures	21,868	22,514	23,100	23,465	22,301
DMEK or DMAEK Procedures	6,459	4,694	2,865	1,522	748

Usage of eye bank tissue to cover glaucoma shunt procedures is shown below in Figure 4. In 2011, sclera was the most commonly used tissue for glaucoma shunt patching, but corneas stored in long-term solution (where endothelial cell counts are not needed) have increased substantially from 2014 to 2016. On April 1, 2015, CMS extended cornea tissue pass through status to corneas in long-term storage used for patch use, but this pass through allowance was terminated on January 1, 2016. The effect of reimbursement uncertainty appears to have had little effect on the increasing slope of this curve, and corneal tissue use in covering tube shunts for glaucoma continues to be very popular with glaucoma surgeons.

Figure 4: Ocular Tissue used for Glaucoma Shunt Patching

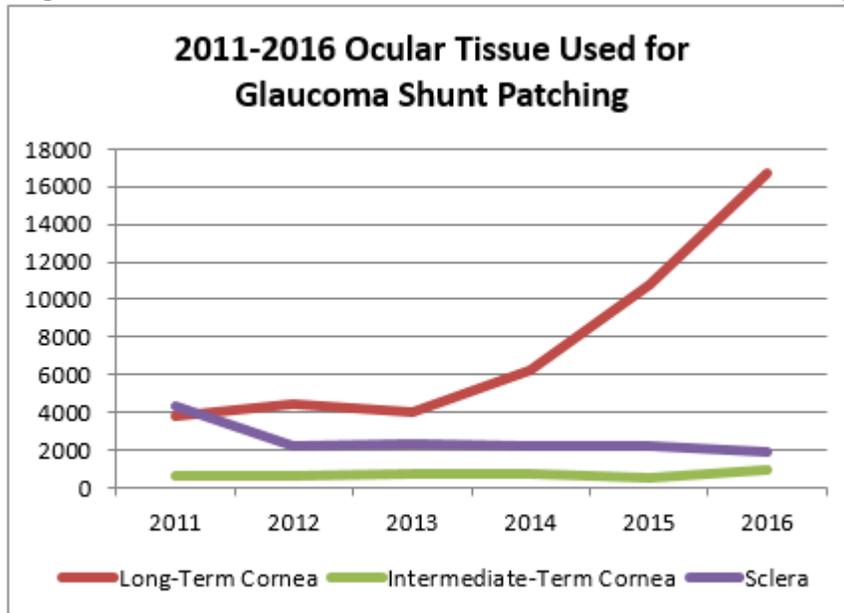


Figure 5 shows different types of keratoplasty procedures performed both domestically and abroad using all tissue from U.S. eye banks. 46% of tissue produced by U.S. eye banks is used for penetrating keratoplasty and 39% is used for endothelial keratoplasty. Penetrating keratoplasty is the most common procedure performed using corneas from U.S. eye banks.

Figure 5: 2015 Use of Released Corneas from U.S. Eye Banks

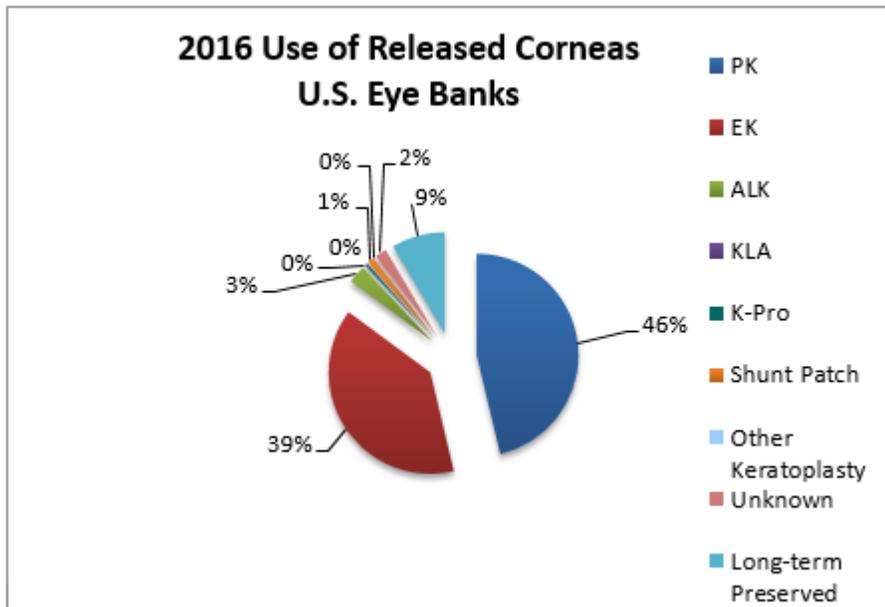


Figure 6 shows domestic utilization of corneas provided by U.S. eye banks in 2016, and does not count corneas shipped abroad. EK comprises 44% of domestic keratoplasty procedures and PK comprises 38%. Endothelial keratoplasty is the most common keratoplasty procedure performed in the U.S. using intermediate-term corneas for the fifth straight year.

Figure 6: 2015 Domestic Uses of Intermediate-Term Corneas from U.S. Eye Banks

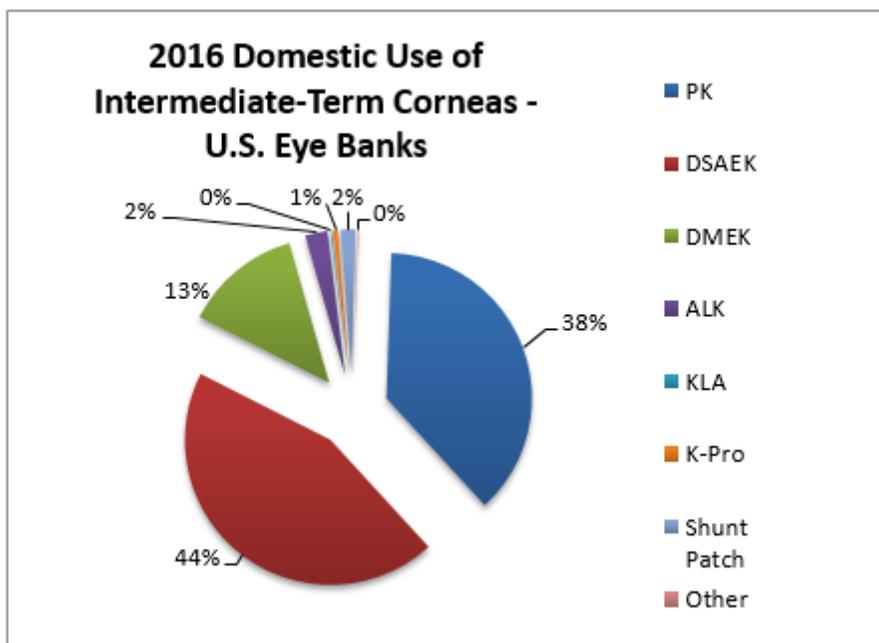


Table 5: Indications for Keratoplasty Reported by US Banks

Indications for Penetrating Keratoplasty	2016		2015	
A. Post-cataract surgery edema	2,729	7.1%	2,905	7.3%
B. Keratoconus	5,463	14.2%	5,835	14.8%
C. Fuchs' Dystrophy	1,171	3.0%	1,235	3.1%
D. Repeat Corneal Transplant	4,529	11.8%	4,267	10.8%
E. Other degenerations or dystrophies	1,164	3.0%	1,148	2.9%
F. Post-refractive surgery	70	0.2%	55	0.1%
G. Microbial changes	677	1.8%	689	1.7%
H. Mechanical or chemical trauma	982	2.6%	1,180	3.0%
I. Congenital opacities	620	1.6%	672	1.7%
J. Pterygium	10	0.0%	15	0.0%
K. Non-infectious ulcerative keratitis or perforation	1,301	3.4%	1,357	3.4%
L. Other causes of corneal dysfunction or distortion (non-endothelial)	2,346	6.1%	2,633	6.7%
M. Other causes of endothelial dysfunction	1,035	2.7%	1,189	3.0%
Z. Unknown, unreported, or unspecified	16,316	42.5%	16,373	41.4%
Total Indications for Penetrating Keratoplasty	38,413		39,554	
Indications for Anterior Lamellar Keratoplasty				
	2016		2015	
B. Keratoconus	732	30.7%	844	38.3%
D. Repeat Corneal Transplant	38	1.6%	50	2.3%
E. Other degenerations or dystrophies	88	3.7%	89	4.0%
F. Post-refractive surgery	4	0.2%	17	0.8%
G. Microbial changes	36	1.5%	56	2.5%
H. Mechanical or chemical trauma	31	1.3%	53	2.4%
I. Congenital opacities	25	1.0%	41	1.9%
J. Pterygium	3	0.1%	5	0.2%
K. Non-infectious ulcerative keratitis or perforation	62	2.6%	82	3.7%
L. Other causes of corneal dysfunction or distortion	191	8.0%	171	7.8%
Z. Unknown, unreported, or unspecified	1,176	49.3%	793	36.0%
Total for Anterior Keratoplasty	2,386		2,201	
Indications for Endothelial Keratoplasty				
	2016		2015	
A. Post-Cataract Surgery Edema	5,558	17.2%	5,385	17.5%
C. Fuchs' Dystrophy	15,845	49.2%	14,472	47.1%
D. Repeat Corneal Transplant	2,822	8.8%	2,613	8.5%
M. Other Causes of Endothelial Dysfunction	2,882	8.9%	3,208	10.4%
Z. Unknown, unreported, or unspecified	5,114	15.9%	5,032	16.4%
Total for Endothelial Keratoplasty	32,221		30,710	

Indications for Transplant:

The indications for keratoplasty procedures utilizing 73,020 corneas provided by U.S. eye banks for PK, ALK and EK are shown (on the preceding page) in Table 5: “Indications for Corneal Transplant Reported by U.S. Banks”. Since 2011, if no specific keratoplasty diagnosis is noted on forms returned to eye banks, the diagnosis is considered “unknown”. The large number of “unknowns” potentially skews the data, since the diagnosis is missing for 31% of all grafts (42.5% of PKs, 49.3% of ALKs and 15.9% of EKs).

Table 6 on the following page shows the data from Table 5 arranged into four basic categories that illustrate the principle diagnoses for procedures performed: 1) endothelial cell failure, 2) stromal or full thickness (non-endothelial) disease, 3) regrafts and 4) unknown. Within these specific diagnosis categories, Fuchs’ dystrophy was the most common indication for keratoplasty again in 2016 (17,016, 23.3%). Post cataract surgery edema was second (8,287, 11.3%). Repeat transplants were up from fourth in 2015 to third in 2016 (7,389, 10.1%), and keratoconus dropped from third to fourth (6,195, 8.5%).

The data in Table 6 show 93.1% of patients with Fuchs’ dystrophy were treated with EK. The 6.9% who received a penetrating keratoplasty presumably had stromal haze or other opacification that would impair visual acuity after endothelial cell replacement alone, could not tolerate the positional restrictions necessary for EK, or did not have access to pre-cut tissue. 88.2% of patients with keratoconus were treated with penetrating keratoplasty, while 11.8% had ALK. The technical difficulty of ALK and uncertainty over reimbursement continue to hold this ratio essentially unchanged for the past four years.

Endothelial keratoplasty numbers increased about the same amount as the increase in DMEK, suggesting that while DSAEK numbers remain fairly constant, and the increase in EK is propelled by increasing numbers of DMEK. Endothelial keratoplasty, as seen in Table 3 and in Figure 1, was the most common type of keratoplasty procedure utilizing corneas in intermediate storage medium performed in 2016.

Endothelial cell failure is the leading indication as a group for keratoplasty from U.S. provided tissue. Forty percent of all keratoplasty procedures were performed for endothelial failure (Fuchs, post cataract surgery edema and other causes of endothelial cell failure). Grafts for corneal edema and Fuchs included 24,285 EKs (83.1%) and 4,935 PKs (16.9%). 18.9% of all keratoplasty procedures were performed for stromal or full thickness disease; of these, 91.5% were PK and 8.5% were ALK, (compared to 9.1% ALK last year). For keratoconus, there were 5,463 (88.2%) PK and 732 (11.8%) ALK performed (compared to 12.6% ALK last year). The overall regraft rate was 10.1%, essentially unchanged from last year: regraft rates for specific procedures were 1.6% for ALK, 8.8% for EK and 11.8% for PK.

Note: Tables 1, 2, 5, and 6 and Figures 4 and 5 refer to corneas provided by U.S. eye banks for domestic and international use.
Figures 1, 2, 3, and 6 and Tables 3 and 4 refer to corneas transplanted only in the U.S.

Table 6: Indications for Transplant 2016								
Endothelial Cell Failure								
Surgical Diagnosis		PK		ALK		EK		TOTAL
A	Post-cataract surgery edema	2,729	32.9%	--	--	5,558	67.1%	8,287
C	Fuch's Dystrophy	1,171	6.9%	--	--	15,845	93.1%	17,016
M	Other causes of endothelial dysfunction	1,035	26.4%	--	--	2,882	73.6%	3,917
Subtotal		4,935	16.9%	0	0%	24,285	83.1%	29,220
		12.8% of PK				75.4% EK		40.0% of grafts

Stromal or Full Thickness (non-endothelial) Disease								
Surgical Diagnosis		PK		ALK		EK		TOTAL
B	Keratoconus	5,463	88.2%	732	11.8%	--	--	6,195
E	Other Degenerations of Dystrophies	1,164	93.0%	88	7.0%	--	--	1,252
F	Post-refractive Surgery	70	94.6%	4	5.4%	--	--	74
G	Microbial Changes	677	95.0%	36	5.0%	--	--	713
H	Mechanical or Chemical Trauma	982	96.9%	31	3.1%	--	--	1,013
I	Congenital Opacities	620	96.1%	25	3.9%	--	--	645
J	Pterygium	10	76.9%	3	23.1%	--	--	13
K	Non-infectious ulcerative keratitis or perforations	1,301	95.5%	62	4.5%	--	--	1,363
L	Other causes of corneal dysfunction or distortion	2,346	92.5%	191	7.5%	--	--	2,537
Subtotal		12,633	91.5%	1,172	8.5%	0	0%	13,805
		32.9% of PK		49.1 % of ALK				18.9% of grafts

Regraft								
Surgical Diagnosis		PK		ALK		EK		TOTAL
D	Repeat Corneal Transplant	4,529	61.3%	38	0.5%	2,822	38.2%	7,389
		11.8% of PK		1.6% of ALK		8.8% of EK		10.1% of grafts

Unknown / Unspecified								
Surgical Diagnosis		PK		ALK		EK		TOTAL
Z.	Unknown, unreported, or unspecified	16,316	72.2%	1,176	5.2%	5,114	22.6%	22,606
		42.5% of PK		49.3% of ALK		15.9% of EK		31.0% of grafts

		PK		ALK		EK		TOTAL
Total for Each Procedure		38,413	52.6%	2,386	3.3%	32,221	44.1%	73,020

Still of concern is the 31.0% “unknown” diagnosis for keratoplasty procedures, up from 30.6% last year, which can skew the data in any number of directions and limit the significance of the conclusions that can be drawn from these data. The “unknowns” may be mostly internationally distributed tissue, which as a group may or may not have the profile of domestic tissue, for which the diagnosis has been noted.

Conclusions:

- 1) Endothelial keratoplasty was the most common domestic keratoplasty procedure in 2016 for the fifth year in a row (see Figure 1).
- 2) 40% of all keratoplasty procedures were for endothelial disease in 2016 (Table 6).
- 3) The slight increase in domestic EK in 2016 was accounted for by the increase in DMEK
 - a) DMEK increased 63.8% in 2015 and 37.6% in 2016.
 - b) DSEK decreased 2.9% in 2016 for the third straight year (2.5% decrease in 2015 and 1.61% decrease in 2014).
- 4) The number of domestic penetrating keratoplasty procedures using tissue in intermediate-term storage solution decreased 3.0% in 2016, the eleventh consecutive year PK procedures in the U.S. have declined. (42,063 in 2005 to 18,579 in 2016) (see Table 3).
- 5) Anterior lamellar keratoplasty, increased slightly from 1,115 in 2015 to 1,232 in 2016.
- 6) Keratolimbal allograft procedures in the U.S. decreased from 97 to 82 in 2016.
- 7) Keratoprosthetic procedures in the U.S. declines from 323 to 279 in 2016.
- 8) Corneas in long-term storage solution used for patching glaucoma tube shunt procedures increased substantially in 2015 and 2016.
- 9) The number of keratoplasty procedures reported as “Unknown” continues to be a significant surgeon induced source of error in the statistical reporting process.

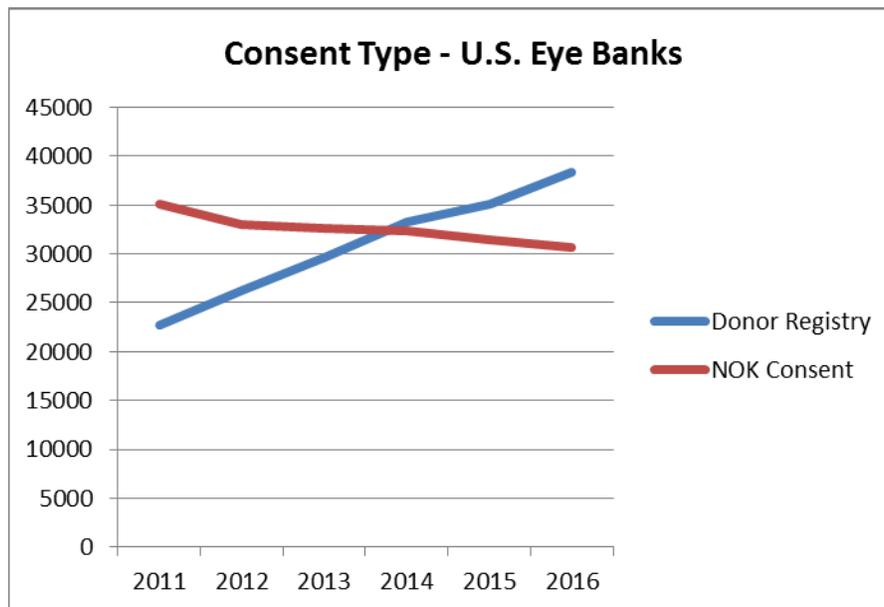
Respectfully submitted,

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2016 Eye Banking Statistics Reported by U.S. Banks: Death Referrals and Tissue Recoveries

Donations	2016	2015	2014	2013	2012
Number of Eye Banks Reporting	62	71	76	76	80
Total Whole Eyes and Corneas Donated	136,318	130,987	128,675	123,079	116,990
Total Number of Donors	69,049	66,526	65,558	62,274	59,221

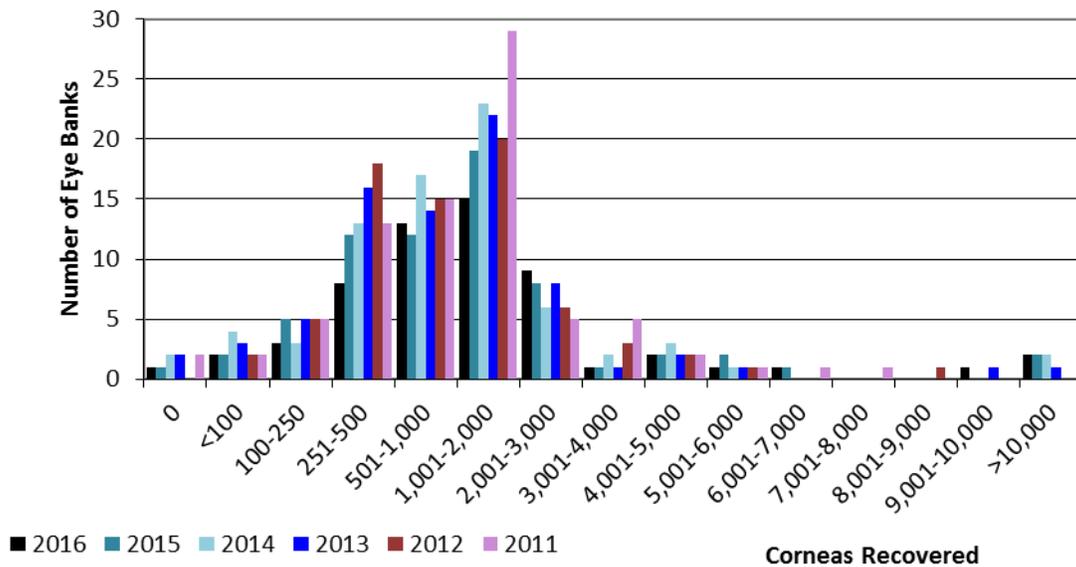
Death Referrals	2016	2015	2014
Total Death Referrals	674,459	693,449	748,786
Death referrals determined eligible	179,316	174,349	166,849
Tissue Recoveries			
Total Donors	69,049	66,526	65,558
Donors recovered not found on donor registry or known to have first person consent	30,704	31,390	32,306
Donors recovered found on donor registry or known to have first person consent	38,345	35,136	33,252
Eyes or Corneas Recovered with Intent for Surgical Use	124,649	119,687	116,071
Eyes or Corneas Recovered for Other Uses	11,669	11,300	12,604



2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Comparison of Eye Bank Cornea Recovery Rates

U.S. Eye Banks							
Recovered Corneas	2011	2012	2013	2014	2015	2016	Trends
0	2	0	2	2	1	1	
<100	2	2	3	4	2	2	
100-250	5	5	5	3	5	3	
251-500	13	18	16	13	12	8	
501-1,000	15	15	14	17	12	13	
1,001-2,000	29	20	22	23	19	15	
2,001-3,000	5	6	8	6	8	9	
3,001-4,000	5	3	1	2	1	1	
4,001-5,000	2	2	2	3	2	2	
5,001-6,000	1	1	1	1	2	1	
6,001-7,000	1	0	0	0	1	1	
7,001-8,000	1	0	0	0	0	0	
8,001-9,000	0	1	0	0	0	0	
9,001-10,000	0	0	1	0	0	1	
>10,000	0	0	1	2	2	2	
Avg. Corneas Recovered for Transplant	1253	1297	1452	1527	1686	2088	
Number of Eye Banks	81	80	76	76	71	62	

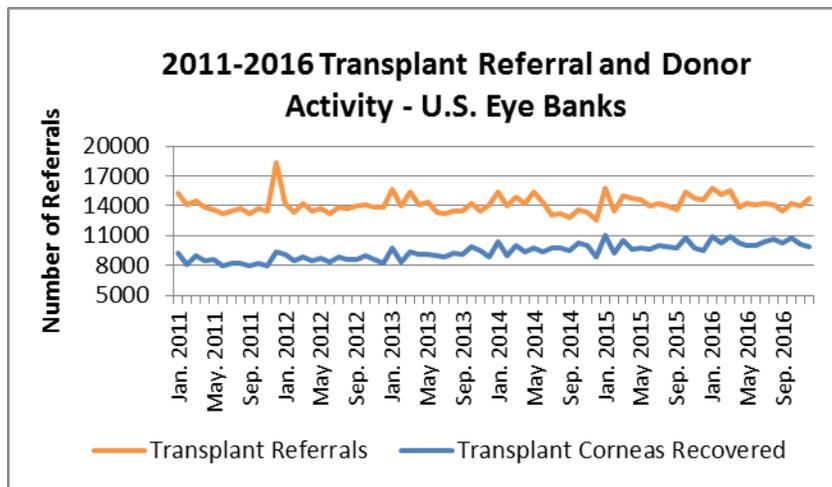
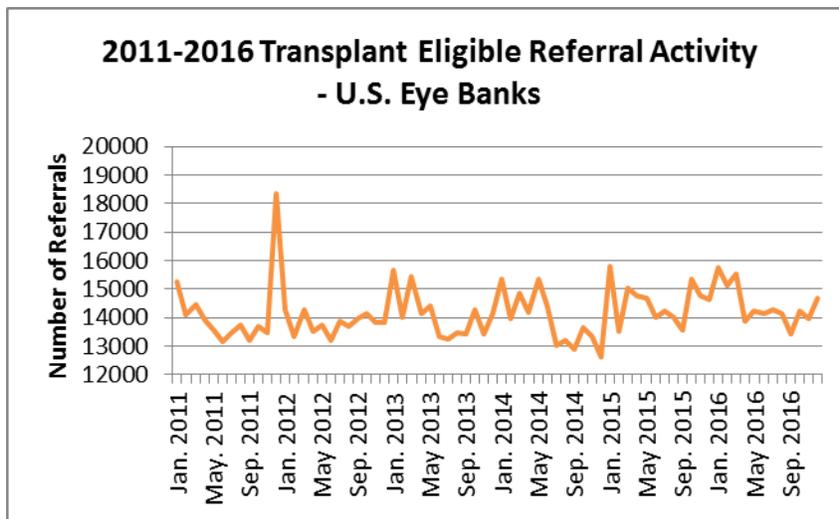
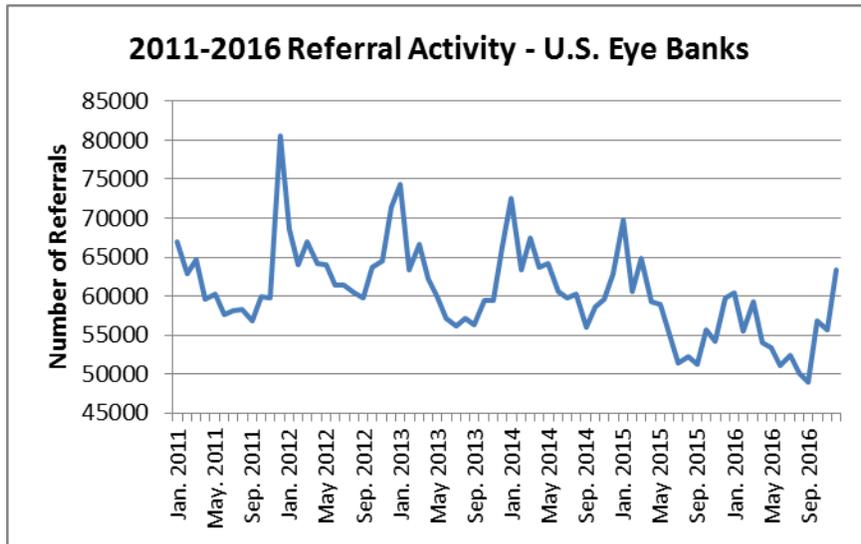
U.S. Eye Banks by Corneas Recovered



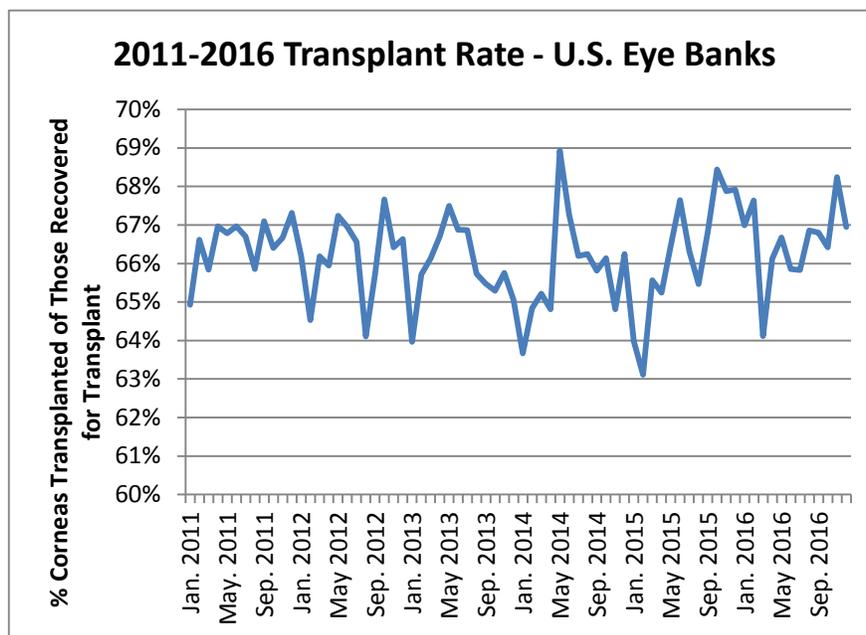
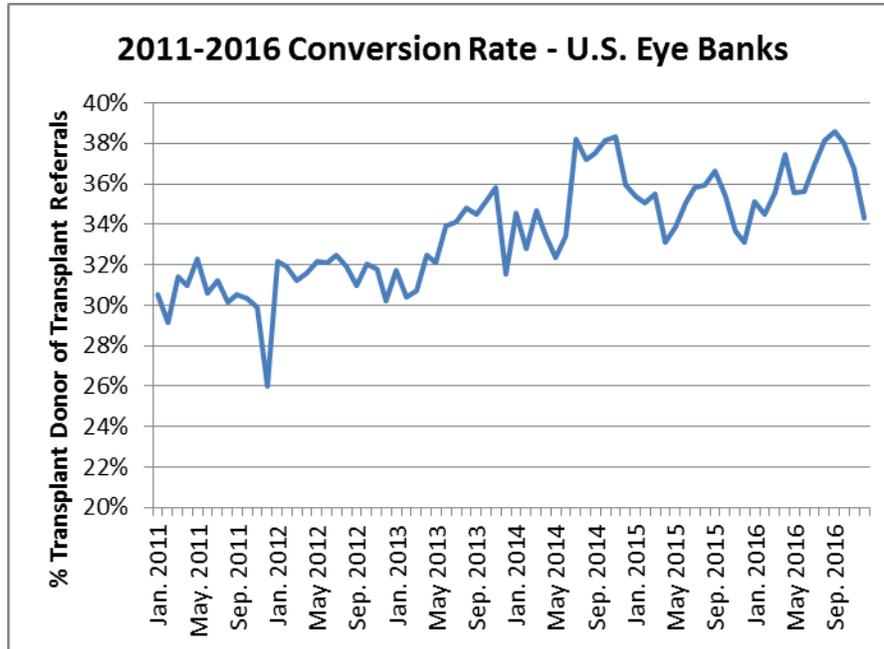
2016 Eye Banking Statistics Reported by U.S. Banks: Referral Trends, Transplant and Conversion Rates

U.S. Eye Banks					
Month	Transplant Rate	Conversion Rate	Death Referrals	Transplant Eligible Referrals	Transplant Intended Corneas Recovered
Jan. 2016	67.4%	34.6%	61342	16310	11154
Feb. 2016	67.6%	33.8%	56116	15417	10253
Mar. 2016	64.1%	34.6%	60146	15961	10850
Apr. 2016	66.1%	36.4%	54683	14263	10208
May 2016	66.7%	34.7%	54050	14633	10013
Jun. 2016	65.8%	34.6%	51965	14589	9986
Jul. 2016	65.8%	35.2%	54665	15022	10431
Aug. 2016	66.9%	36.4%	52323	14824	10662
Sep. 2016	66.8%	36.8%	51056	14078	10219
Oct. 2016	66.4%	36.9%	57584	14678	10741
Nov. 2016	68.2%	35.8%	56377	14381	10201
Dec. 2016	67.2%	33.2%	64152	15160	9931
2011 Total	66.5%	30.1%	745405	170388	101533
2012 Total	66.2%	31.7%	770479	165688	103774
2013 Total	65.9%	33.0%	738404	168977	110365
2014 Total	65.9%	35.4%	748786	166849	116071
2015 Total	66.3%	34.9%	693449	174349	119687
2016 Total	66.6%	35.2%	674459	179316	124649
2016 Avg.	N/A	N/A	56205	14943	10387
Std. Dev.	1.1%	1.2%	3999	675	385

2016 Eye Banking Statistics Reported by U.S. Banks: Referral Trends, Transplant and Conversion Rates

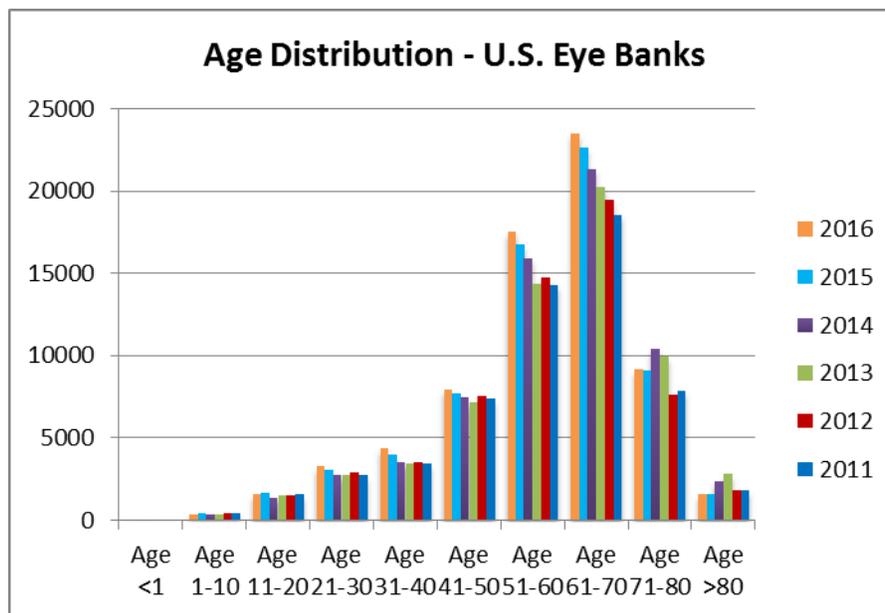


2016 Eye Banking Statistics Reported by U.S. Banks: Transplant and Conversion Rates



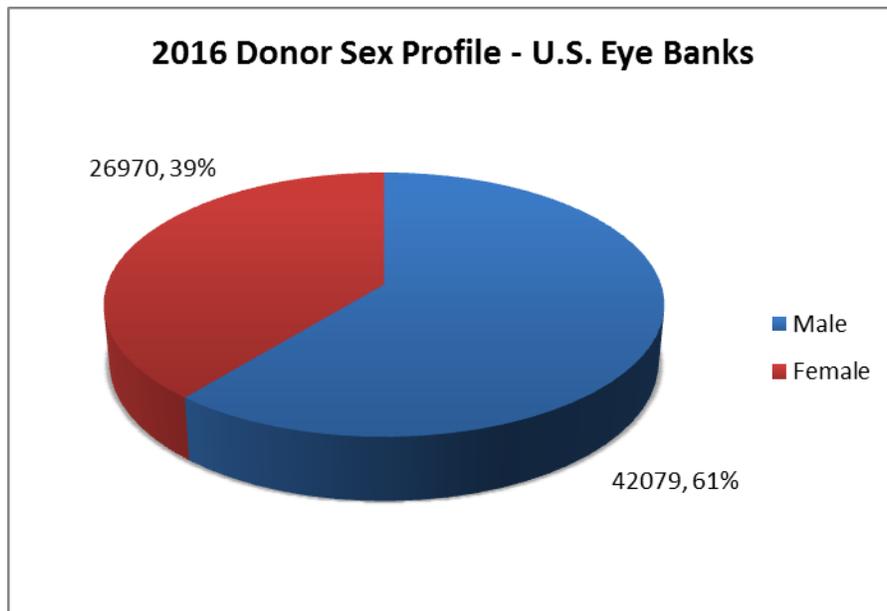
2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Donors by Age Reported by U.S. Banks

U.S. Eye Banks - Age Profile										
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
2011	12	405	1541	2700	3395	7370	14245	18521	7830	1816
2012	21	367	1468	2843	3451	7542	14679	19431	7603	1816
2013	21	346	1436	2732	3431	7099	14307	20213	9907	2782
2014	15	380	1392	2780	3531	7474	15907	21338	10413	2328
2015	15	359	1602	3035	3917	7657	16717	22586	9055	1583
2016	11	348	1587	3223	4327	7933	17460	23459	9136	1565
Monthly Avg	1	29	132	269	361	661	1455	1955	761	130
Std. Dev.	0.8	5.6	8.7	19.1	22.4	21.7	76.2	83.6	48.2	20.1



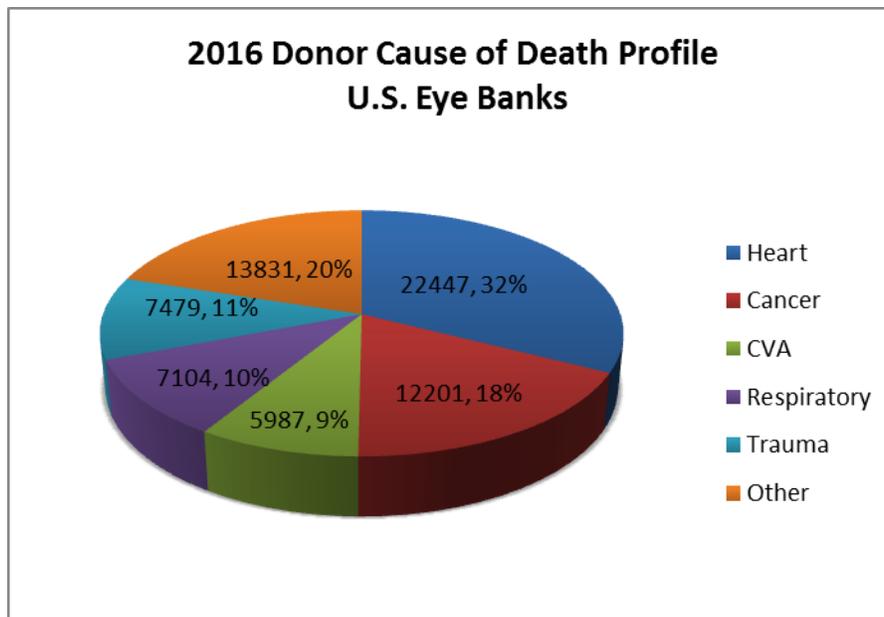
2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Donors by Gender Reported by U.S. Banks

U.S. Eye Banks - Sex Profile		
Year	Male	Female
2011	35491	22344
2012	36104	23117
2013	38221	24053
2014	39975	25583
2015	40990	25536
2016	42079	26970
Monthly Avg.		
	3507	2248
Std. Dev.		
	132.8	86.3



2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Cause of Death Reported by U.S. Banks

U.S. Eye Banks - Cause of Death Profile						
Year	Heart	Cancer	CVA	Respiratory	Trauma	Other
2011	19578	10680	5224	5785	6327	10241
2012	19889	11117	5342	5874	6730	10269
2013	20302	11581	5618	6557	6806	11410
2014	21969	11831	5884	7134	6893	11847
2015	21587	11722	5699	7052	7427	13039
2016	22447	12201	5987	7104	7479	13831
Monthly Avg.	1871	1017	499	592	623	1153
Std. Dev.	102.7	63.9	18.4	70.9	60.5	53.5



2016 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 ¹	2016		2015	
Positive or Reactive Test for Communicable Disease Agent or Disease	10,523	30.8%	9,903	29.5%
Anti-HIV-1/2	185	0.5%	220	0.7%
HIV-1 Nucleic Acid Test Positive	98	0.3%	80	0.2%
Anti-HCV	1,996	4.3%	2,025	6.0%
Hepatitis C Nucleic Acid Test Positive	766	2.2%	700	2.1%
Hepatitis B Surface Antigen (HBsAg) Positive	1,457	4.3%	1,070	3.2%
Hepatitis B Core (HBcAb) Positive	4,755	13.9%	4,453	13.3%
Hepatitis B Nucleic Acid Test Positive	353	1.0%	287	0.9%
Syphilis Positive	468	1.4%	358	1.1%
HTLV Antibody (HTLV I/II Ab)	143	0.4%	234	0.7%
West Nile Virus Nucleic Acid Test Positive	3	0.0%	10	0.03%
Other Positive Serology	299	0.9%	466	1.4%
Other Communicable Disease Testing Issue	632	1.9%	368	1.1%
Medical Record or Autopsy Findings	7,578	22.2%	7,754	23.1%
Dementia	778	2.3%	827	2.5%
Sepsis	3,511	10.3%	3,521	10.5%
Sepsis - (determined by positive blood cultures)	1,249	3.7%	1,078	3.2%
Sepsis - (determined by other indicators)	2,262	6.6%	2,443	7.3%
Plasma Dilution	346	1.0%	381	1.1%
Unknown Cause of Death	192	0.6%	326	1.0%
Medical Record or Autopsy Findings: Other	2,751	8.1%	2,699	8.0%
Medical/Social Interview	2,803	8.2%	2,745	8.2%
Travel Questions	418	1.2%	467	1.4%
Dementia / Neurological Issues	216	0.6%	180	0.5%
Medical/Social Interview: Other	2,169	6.4%	2,098	6.2%
Body Exam	280	0.8%	266	0.8%
Total eyes/corneas intended for transplant but not released for transplant	34,126		33,577	

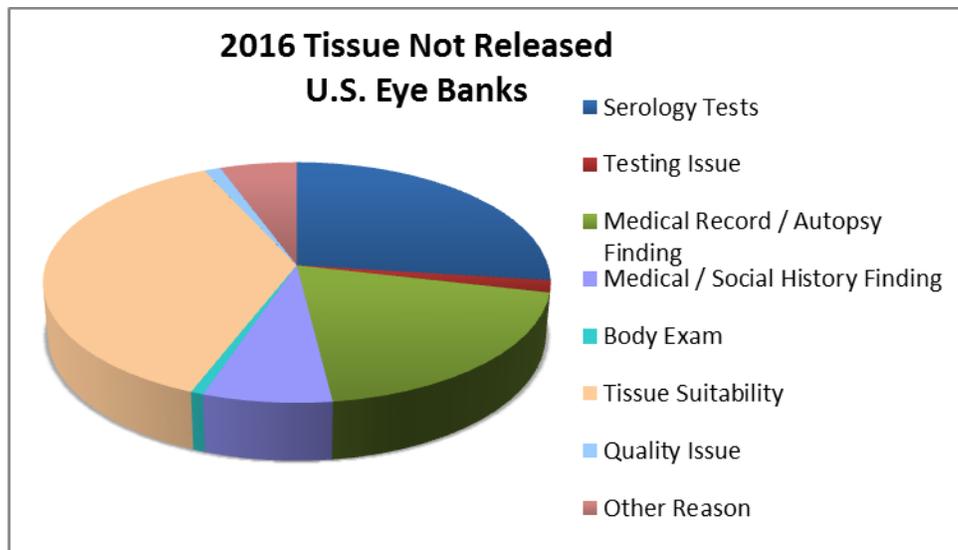
*Percentages read from this table should be read as "of the tissue not released for transplant"

¹ Some tissues had multiple contraindications.

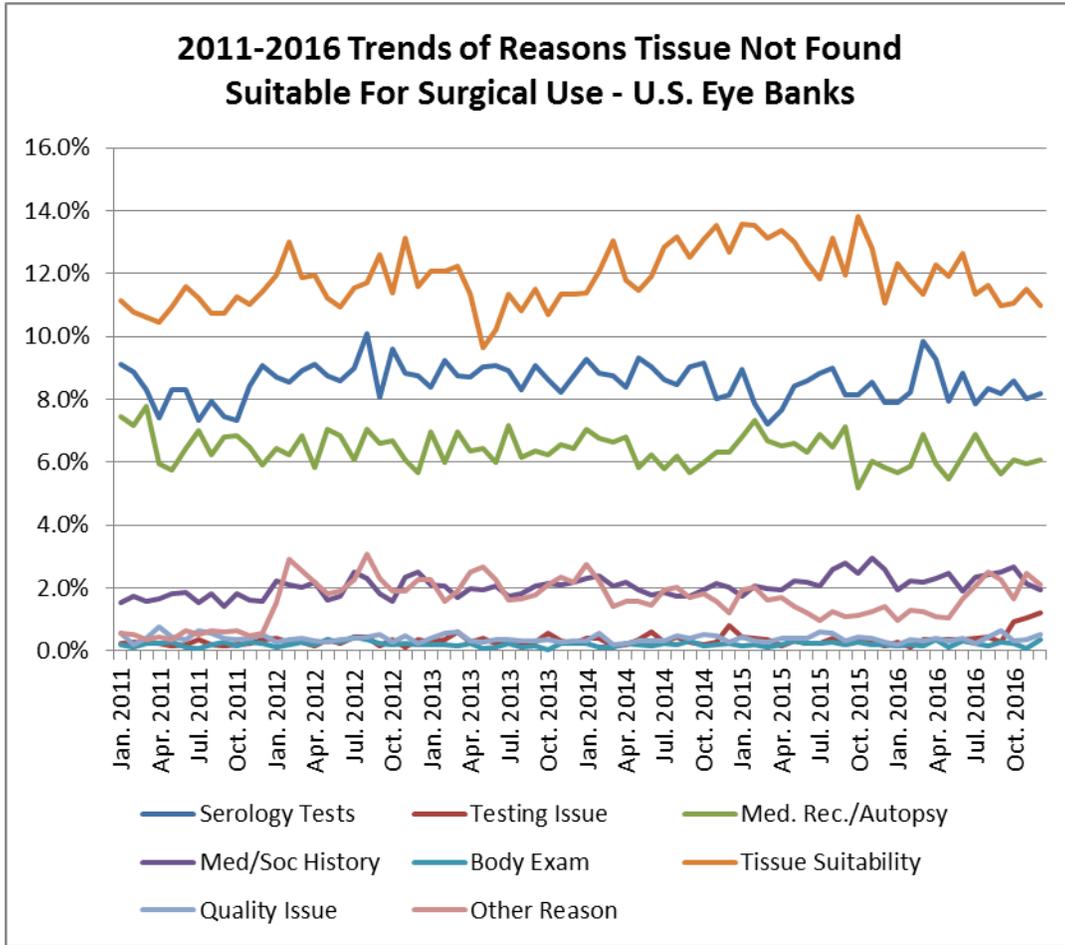
2016 Eye Banking Statistics Reported by U.S. Banks: Reasons Tissue Intended for Surgery Was Not Released

Contraindications for Transplant (continued)	2016		2015	
Tissue Suitability (e.g. slit lamp/spec eval)	14,511	42.5%	15,341	45.7%
Epithelium	272	0.8%	313	0.9%
Stroma	5,921	17.4%	5,954	17.7%
Prior reactive surgery	508	1.5%	512	1.5%
Scar	1,040	3.0%	1,151	3.4%
Infiltrate	3,076	9.0%	2,983	8.9%
Foreign Body	135	0.4%	210	0.6%
Other	1,162	3.4%	1,098	3.3%
Descemet's membrane	425	1.2%	520	1.5%
Endothelium	7,893	23.1%	8,885	26.5%
Quality Issue	477	1.4%	486	1.4%
Storage	131	0.4%	135	0.4%
Labeling	16	0.0%	9	0.0%
Processing	251	0.7%	252	0.8%
Supply or Reagent	57	0.2%	58	0.2%
Environmental Control	22	0.1%	32	0.1%
Other Reason prior to Tissue Release	2,190	6.4%	1,708	5.1%
Total eyes/corneas intended for transplant but not released for transplant	34,126		33,577	

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

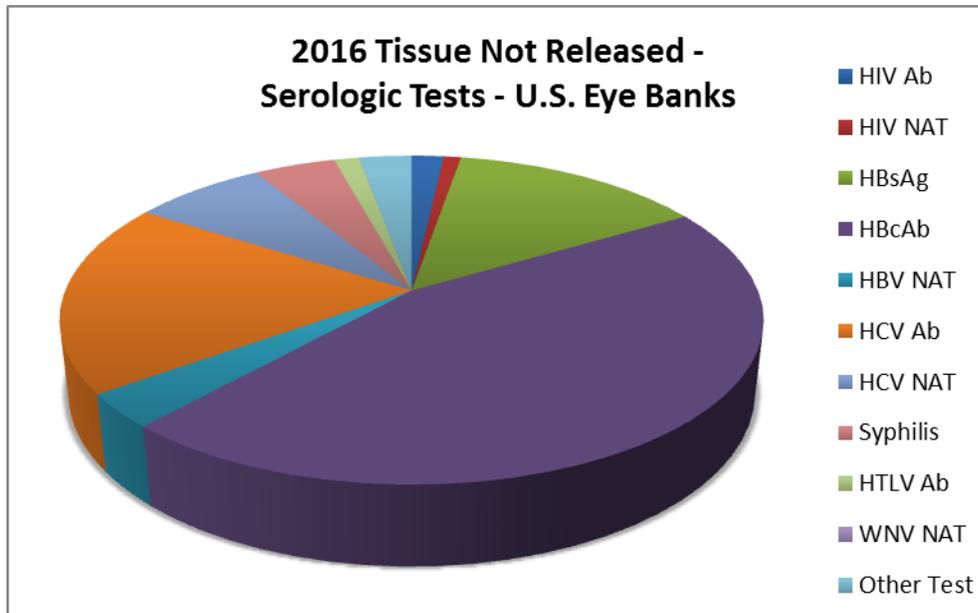


2016 Eye Banking Statistics Reported by U.S. Banks: Reasons Tissue Intended for Surgery Was Not Released



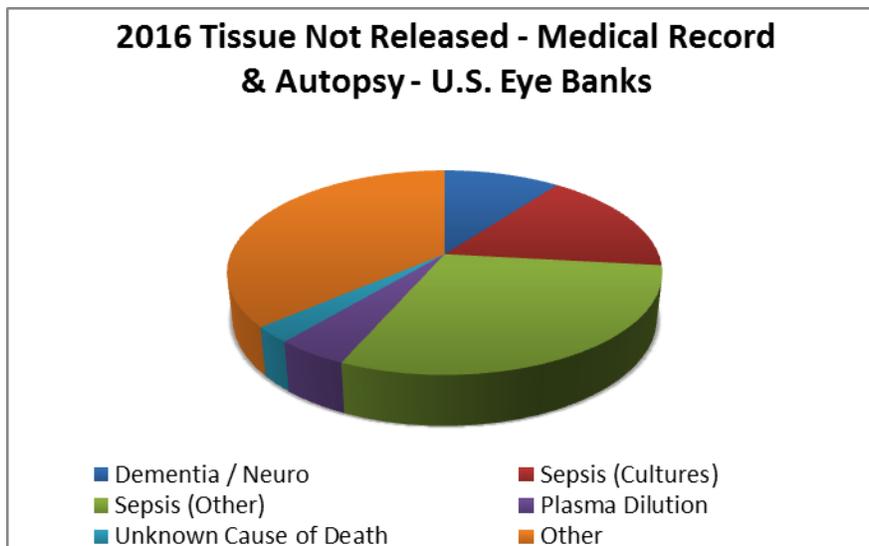
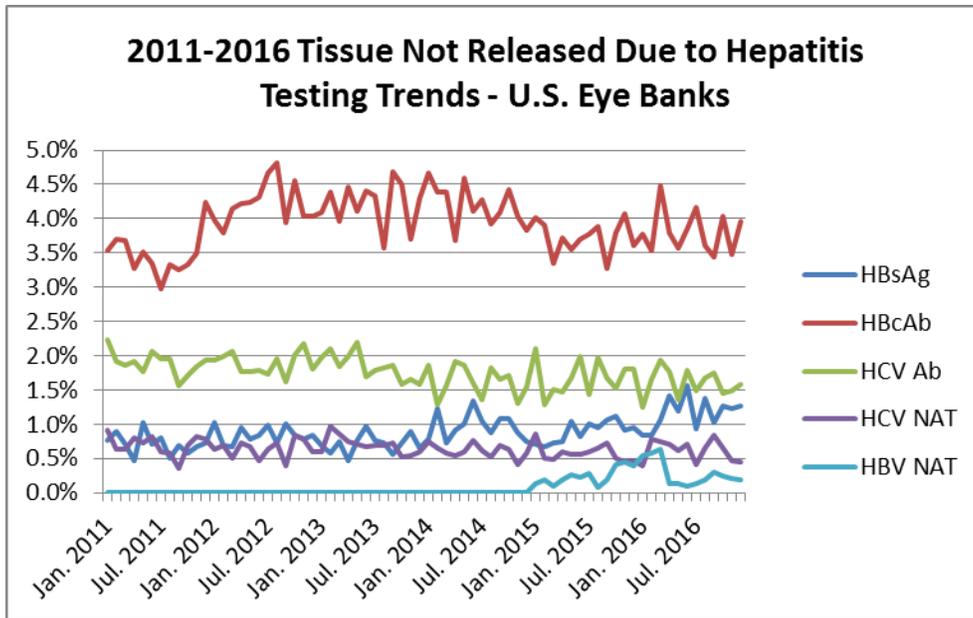
Reasons Not Released	2011	2012	2013	2014	2015	2016	Trends
Serology Tests	8299	9250	9656	10161	9903	10523	
Testing Issue	246	307	375	423	368	632	
Med. Rec./Autopsy Finding	6756	6701	7138	7313	7754	7578	
Med Soc Hx Finding	1694	2158	2200	2331	2745	2803	
Body Exam	205	273	189	235	266	280	
Tissue Suitability	11168	12360	12384	14463	15341	14511	
Quality Issue	476	378	416	434	486	477	
Other Reason	542	2296	2294	2065	1708	2194	

2016 Eye Banking Statistics Reported by U.S. Banks: Reasons Tissue Intended for Surgery Was Not Released



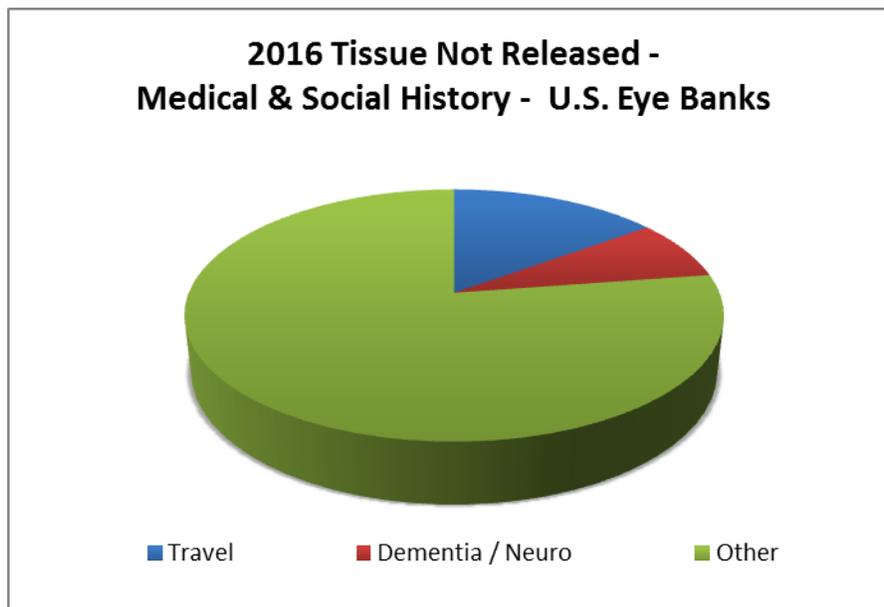
Not Released - Serology	2011	2012	2013	2014	2015	2016	Trend
HIV	400	258	253	255	300	283	
HIV I/II Ab	164	173	169	185	220	185	
HIV NAT	236	85	84	70	80	98	
HBV	4261	5268	5425	6366	5810	6565	
HBsAg	723	876	786	1130	1070	1457	
HBcAb	3538	4392	4639	4889	4453	4755	
HBV NAT	0	0	0	347	287	353	
HCV	2637	2623	2791	2598	2725	2762	
HCV Ab	1925	1957	2029	1889	2025	1996	
HCV NAT	712	666	762	709	700	766	
Syphilis	347	348	397	390	358	468	
HTLV	313	215	237	206	234	143	
WNV	0	0	0	4	10	3	
Other	341	538	553	342	466	299	

2016 Eye Banking Statistics Reported by U.S. Banks: Reasons Tissue Intended for Surgery Was Not Released



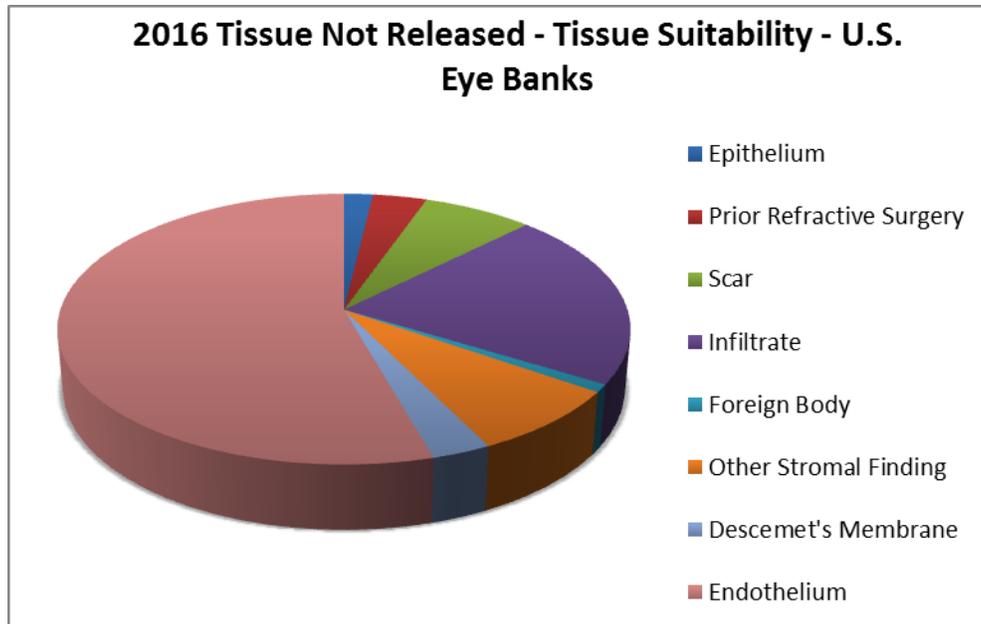
2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Reasons Tissues Were Not Released

Not Released - Med Rec / Autopsy	2011	2012	2013	2014	2015	2016	Trends
Dementia/Neuro	491	542	660	733	827	778	
Sepsis (Cultures)	925	880	958	1067	1078	1249	
Sepsis (Other)	2356	2511	2628	2443	2443	2262	
Plasma Dilution	422	353	447	445	381	346	
Unknown COD	507	416	485	388	326	192	
Other	2055	1999	1960	2237	2699	2751	



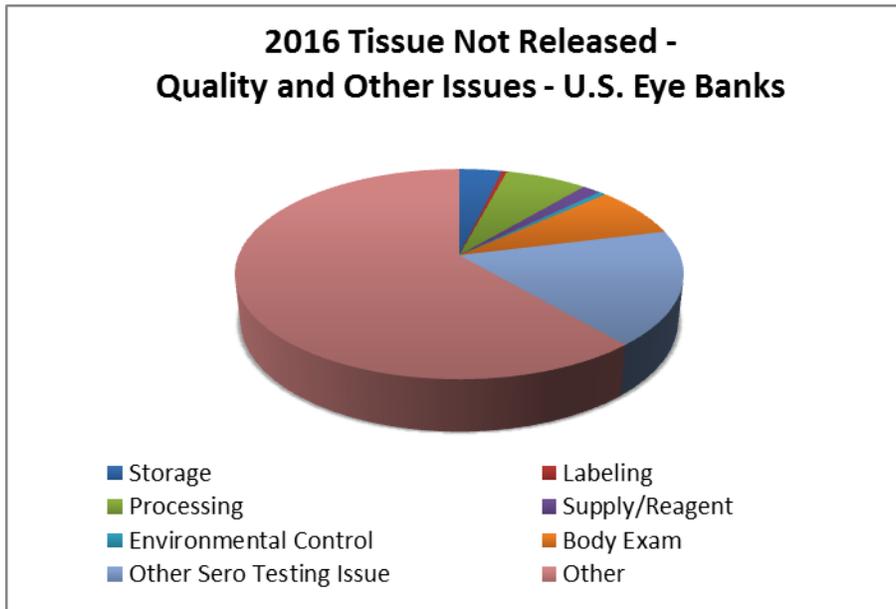
Not Released - Med Soc	2011	2012	2013	2014	2015	2016	Trends
Travel	257	285	338	379	467	418	
Dementia/Neuro	146	174	198	139	180	216	
Other	1291	1699	1664	1813	2098	2169	

2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Tissue Suitability Reasons Tissues Were Not Released



Not Released - Tissue Suitability	2011	2012	2013	2014	2015	2016	Trends
Epithelium	368	288	279	403	313	272	
Prior Refractive Surgery	345	298	390	473	512	508	
Scar	989	1036	1329	1628	1151	1040	
Infiltrate	2246	2455	2800	2755	2983	3076	
Foreign Body	218	200	188	187	210	135	
Other Stromal Finding	1034	1404	1095	1068	1098	1162	
Descemet's Membrane	403	438	346	455	520	425	
Endothelium	5565	6241	5957	7494	8554	7893	

2016 Eye Banking Statistics Reported by U.S. Banks: Quality Issues for Tissue Not Released

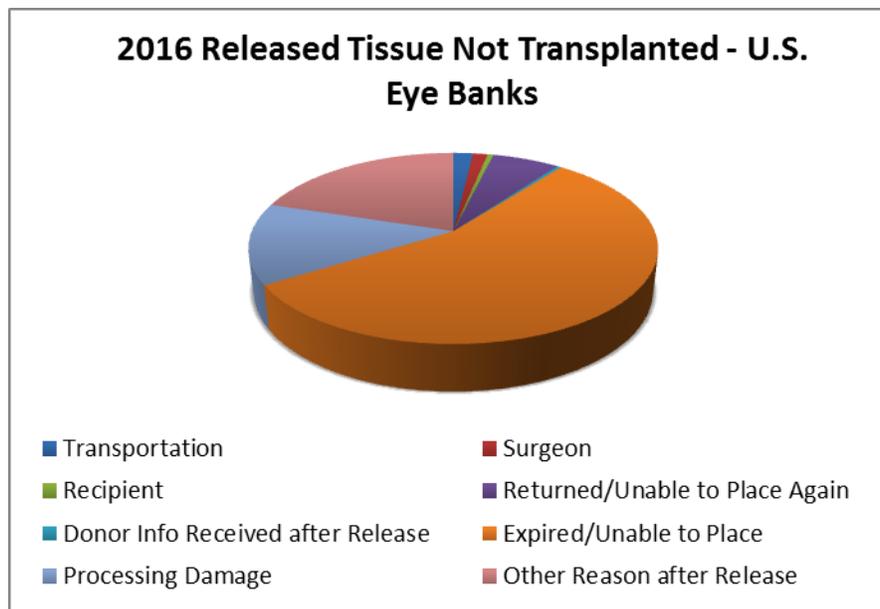


Not Released - Quality Issues / Other	2011	2012	2013	2014	2015	2016	Trends
Storage Issue	173	123	101	136	135	131	
Labeling Issue	44	14	14	11	9	16	
Processing Issue (not released)	148	181	225	232	252	251	
Supply / Reagent Issue	84	40	47	24	58	57	
Environmental Control Issue	27	20	29	31	32	22	
Body Exam	205	273	189	235	266	280	
Other Sero Testing Issue	246	307	375	423	368	632	
Other Issue	542	2296	2294	2065	1708	2194	

2016 Eye Banking Statistics Reported by U.S. Banks: Reasons Released Tissues Were Not Transplanted

Reasons Released Tissues Were Not Transplanted	2016		2015	
Transportation Issue	139	1.8%	226	3.3%
Surgeon Issue	103	1.4%	140	2.1%
Recipient Issue	41	0.5%	35	0.5%
Returned and Unable to Place Again	475	6.3%	511	7.5%
Donor Information Not Available at the Time of Tissue Release	28	0.4%	50	0.7%
Expired or Unable to Place Tissue	4,176	55.5%	3,958	58.2%
Tissue Damaged During Processing	1,030	13.7%	764	11.2%
Other Reason After Release of Tissue	1,511	20.1%	1,359	20.0%
Total eyes/corneas released for transplant but not used for transplant	7,529		6,806	

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



Released but Not Transplanted	2011	2012	2013	2014	2015	2016	Trends
Transport Issue	127	116	109	169	226	139	
Surgeon Issue	199	146	162	150	140	103	
Recipient Issue	54	37	38	51	35	41	
Returned, Unable to Place Again	299	301	267	414	511	475	
Donor Info Received After Release	39	12	54	26	50	28	
Expired, Unable to Place	3137	3798	3428	4265	3958	4176	
Processing Damage After Release	283	440	501	596	764	1030	
Other Reason After Release	393	270	714	1063	1359	1511	

2016 Eye Banking Statistics Reported by U.S. Banks: Outcomes of Tissue Recovered for Transplant

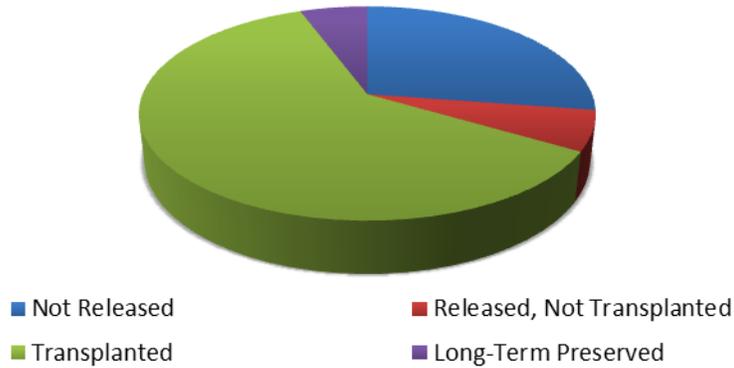
Donations	2016	2015	% Change
Eye Banks Reported	62	71	(-12.7%)
Total Whole Globes and Corneas Donated	136,318	130,987	4.1%
Total Number of Donors	69,049	66,526	3.8%
Distribution	2016	2015	% Change
Intermediate-Term Preserved Corneas	75,926	74,623	1.7%
Sclera	3,380	3,225	4.8%
Long-Term Preserved Corneas	18,133	11,672	55.4%
Research	17,023	16,924	0.6%
Training	9,916	10,003	(-0.9%)

Outcomes of Tissue Recovered for Transplant - 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. 2016	11154	0	0	2938	26.3%	700	6.3%	6861	61.5%	655	5.9%
Feb. 2016	10253	0	0	2683	26.2%	636	6.2%	6325	61.7%	609	5.9%
Mar. 2016	10850	0	0	3106	28.6%	788	7.3%	6265	57.7%	691	6.4%
Apr. 2016	10208	0	0	2880	28.2%	579	5.7%	6286	61.6%	463	4.5%
May 2016	10013	0	0	2710	27.1%	624	6.2%	6248	62.4%	431	4.3%
Jun. 2016	9986	0	0	2850	28.5%	561	5.6%	5988	60.0%	587	5.9%
Jul. 2016	10431	0	0	2881	27.6%	683	6.5%	6264	60.1%	603	5.8%
Aug. 2016	10662	0	0	2985	28.0%	548	5.1%	6441	60.4%	688	6.5%
Sep. 2016	10219	0	0	2739	26.8%	654	6.4%	6169	60.4%	657	6.4%
Oct. 2016	10741	0	0	2975	27.7%	632	5.9%	6651	61.9%	483	4.5%
Nov. 2016	10201	0	0	2665	26.1%	576	5.6%	6459	63.3%	501	4.9%
Dec. 2016	9931	0	0	2714	27.3%	548	5.5%	5969	60.1%	700	7.0%
2011 Total	101533	7	13	29407	29.0%	4536	4.5%	67520	66.5%	3017	3.0%
2012 Total	103774	4	7	30185	29.1%	4908	4.7%	68684	66.2%	2454	2.4%
2013 Total	110365	90	6	32456	29.4%	5182	4.7%	68442	62.1%	4294	3.9%
2014 Total	116071	2	4	32958	28.4%	6681	5.8%	72013	62.0%	4420	3.8%
2015 Total	119687	1	2	33577	28.1%	6806	5.7%	74624	62.3%	4681	3.9%
2016 Total	124649	0	0	34126	27.4%	7529	6.0%	75926	60.9%	7068	5.7%
2016 Avg.	10387	0	0	2844	N/A	627	N/A	6327	N/A	589	N/A
Std. Dev.	385	0.00	0.0	142	0.9%	72	0.6%	253	1.5%	96	0.9%

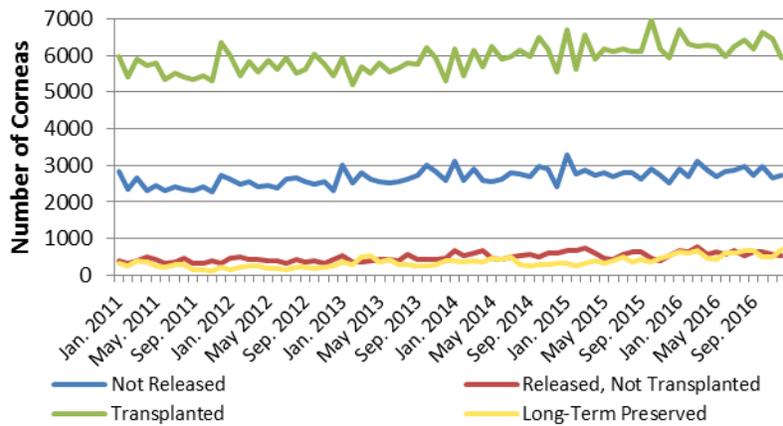
*Percentages read from this table should be read as "of the tissue recovered with transplant intent"

2016 Eye Banking Statistics Reported by U.S. Banks: Outcomes of Tissue Recovered for Transplant

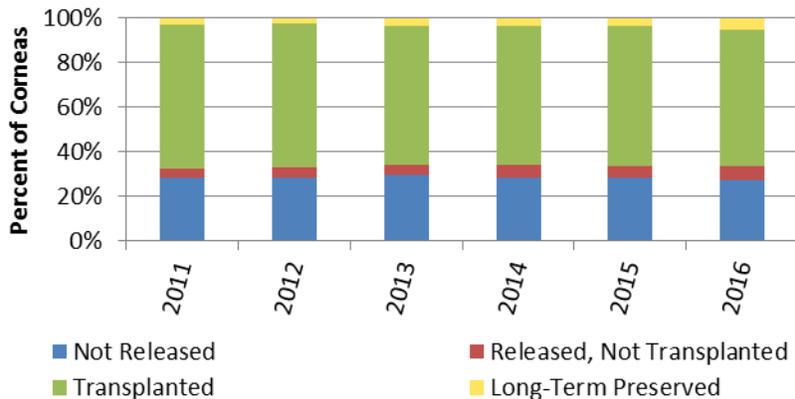
2016 Outcomes of Tissue Recovered for Transplant - U.S. Eye Banks



2011-2016 Trends of Outcomes of Tissue Recovered for Transplant - U.S. Eye Banks

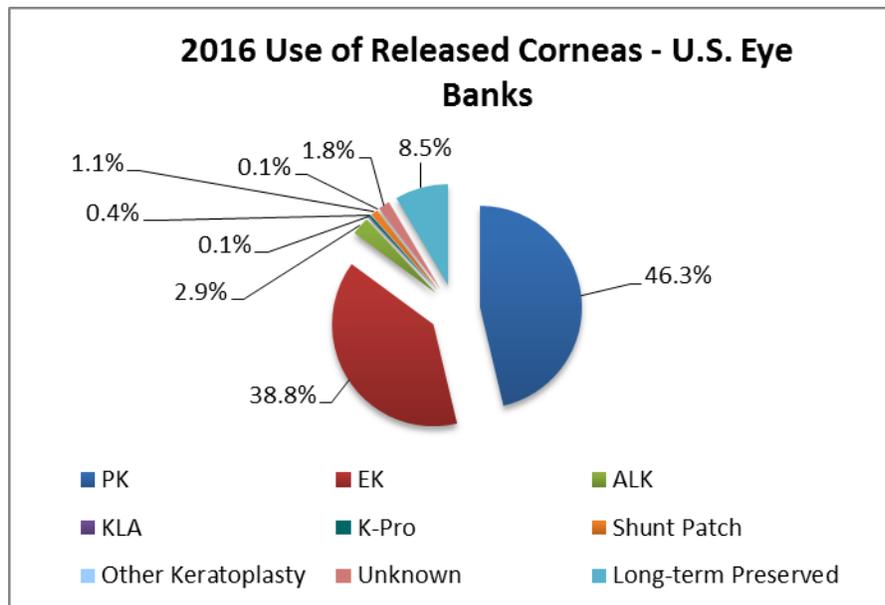


2011-2016 Relative Outcomes of Tissue Recovered for Transplant - U.S. Eye Banks

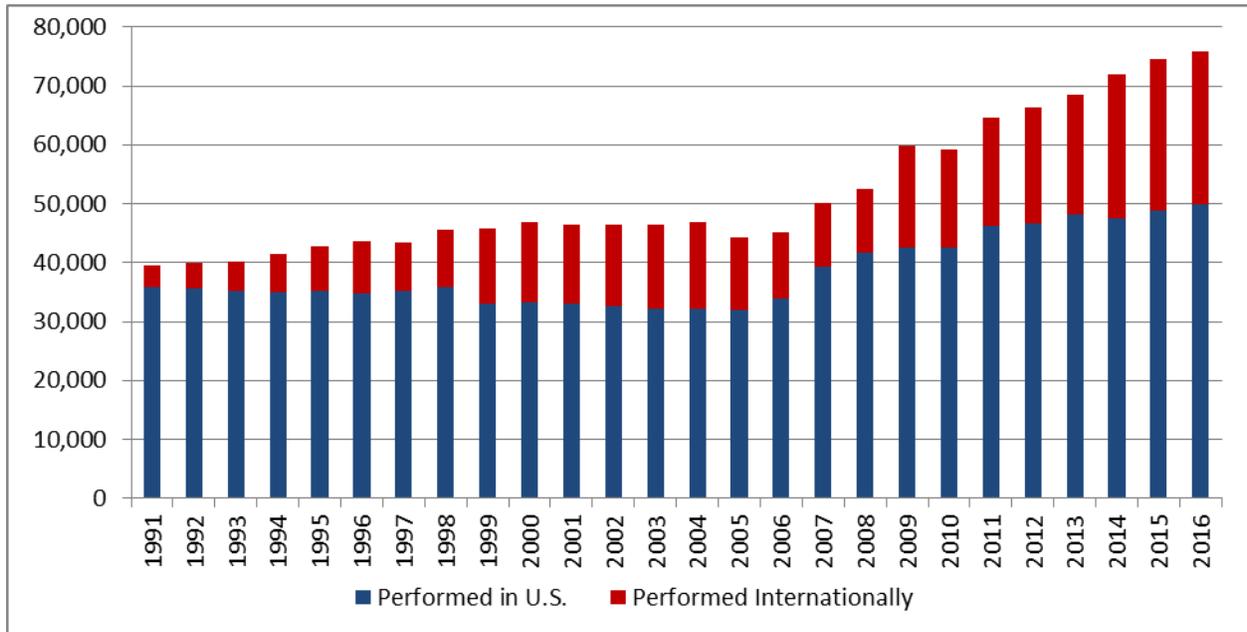


2016 Eye Banking Statistics Reported by U.S. Banks: Use of Donated Tissues

Distribution	2016	2015	2014	2013	2012
Corneal Grafts Total	82,994	79,304	76,431	72,736	68,681
Penetrating Keratoplasty	38,413	39,554	38,919	36,998	36,716
Anterior Lamellar Keratoplasty	2,386	2,201	1,953	2,009	1,855
Endothelial Keratoplasty	32,221	30,710	28,961	27,298	24,277
Keratolimbal Allograft	97	107	88	110	97
Keratoprosthesis (K-Pro)	313	364	294	255	263
Glaucoma Shunt Patch or other non-keratoplasty use	917	527	755	687	676
Other keratoplasty (experimental surgery)	65	19	17	17	44
Unknown or Unspecified	1,514	1,142	1,026	1,068	1,554
Sclera	3,380	3,225	3,345	3,693	3,497
Long-Term Preserved Corneas	18,133	11,672	7,223	4,840	5,095
Keratoplasty	1,335	737	938	499	305
Glaucoma Shunt Patching	16,683	10,843	6,212	4,040	4,435
Other Surgical Uses	115	92	73	301	335
Research	17,023	16,924	17,670	17,384	19,320
Training	9,916	10,003	9,295	7,451	6,850



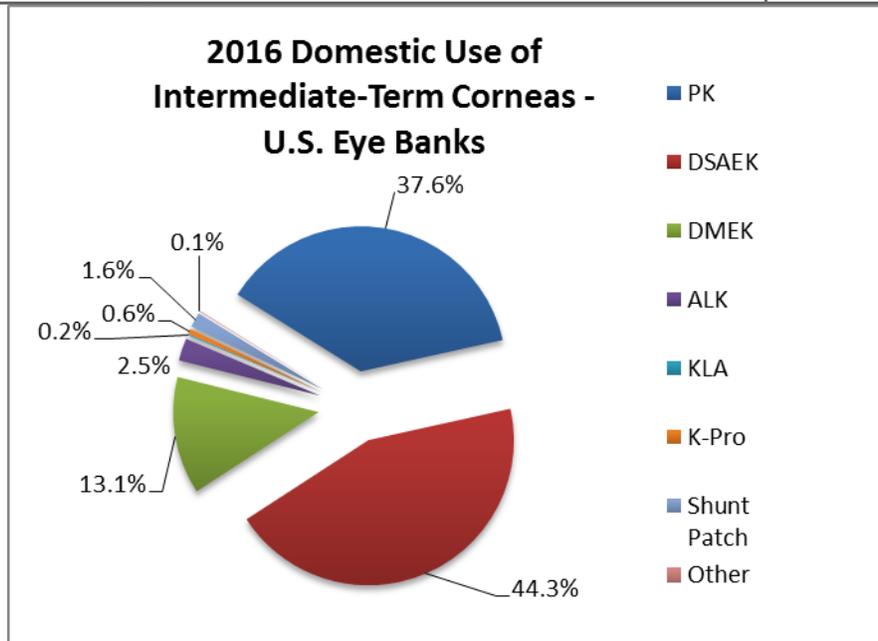
2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Annual Number of Corneal Transplants Supplied by U.S. Banks



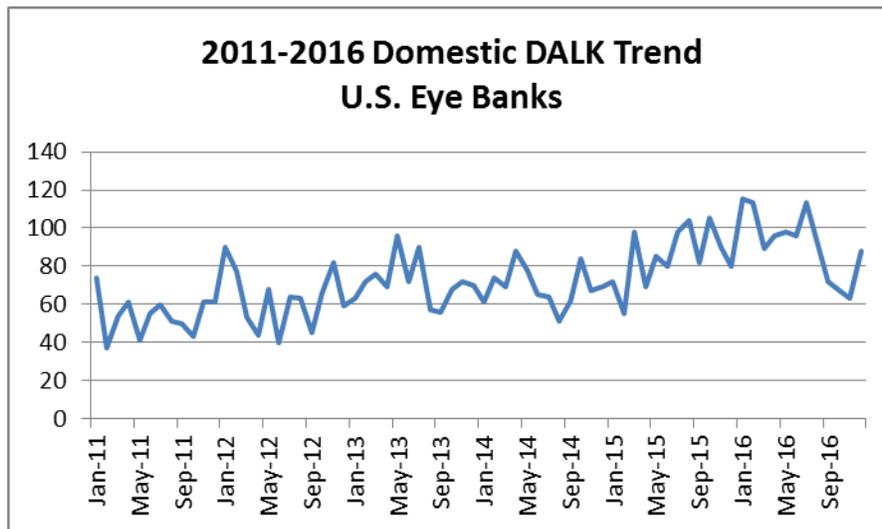
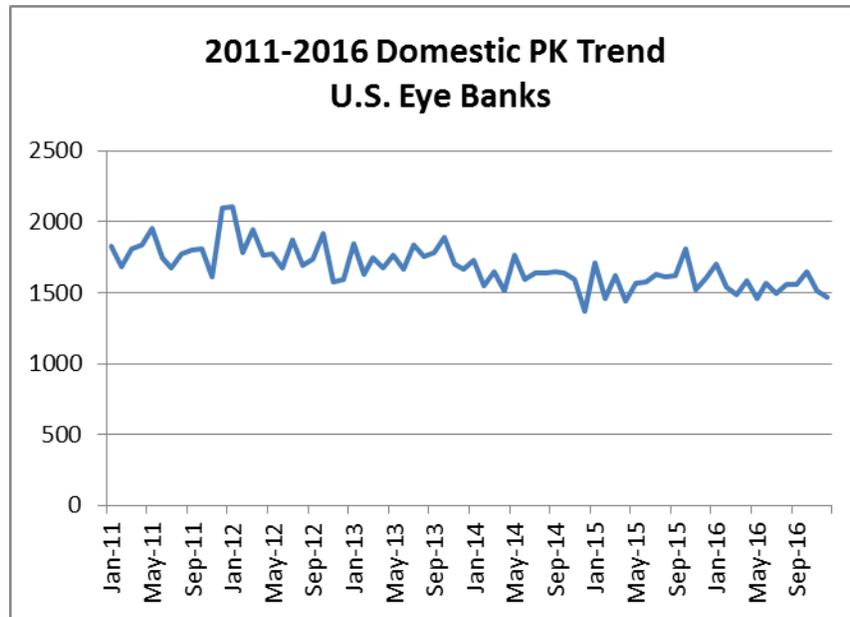
Year	Total Provided by U.S.	Performed in U.S.
1991	39,515	35,831
1992	39,973	35,525
1993	40,215	35,173
1994	41,539	35,022
1995	42,740	35,300
1996	43,711	34,668
1997	43,492	35,209
1998	45,579	35,861
1999	45,765	33,020
2000	46,949	33,260
2001	46,532	33,035
2002	46,440	32,559
2003	46,436	32,240
2004	46,841	32,106
2005	44,329	31,952
2006	45,035	33,962
2007	50,122	39,391
2008	52,487	41,652
2009	59,784	42,606
2010	59,271	42,642
2011	67,590	46,196
2012	68,681	46,684
2013	72,736	48,229
2014	76,431	47,530
2015	79,304	48,792
2016	82,994	49,869

2016 Eye Banking Statistics Reported by U.S. Banks: Domestic Surgery Use of Intermediate-Term Preserved Tissue

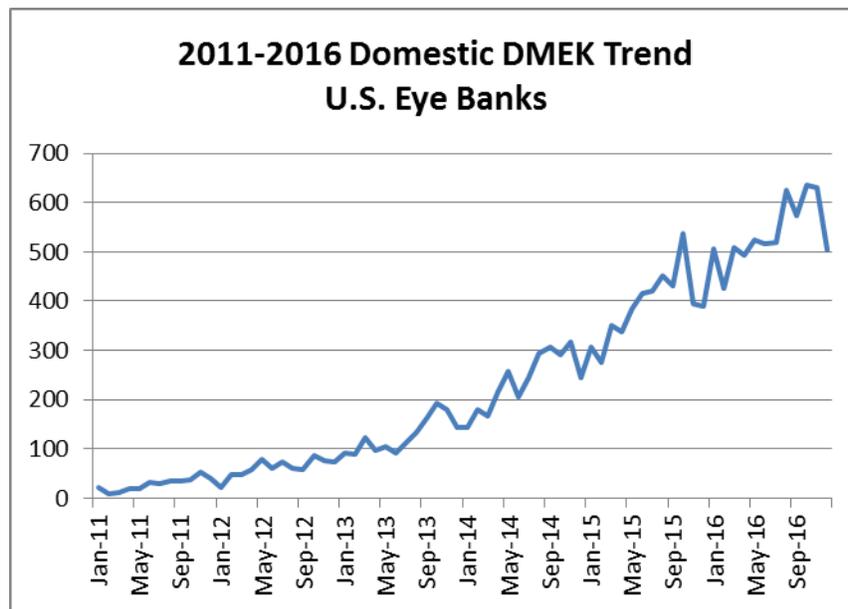
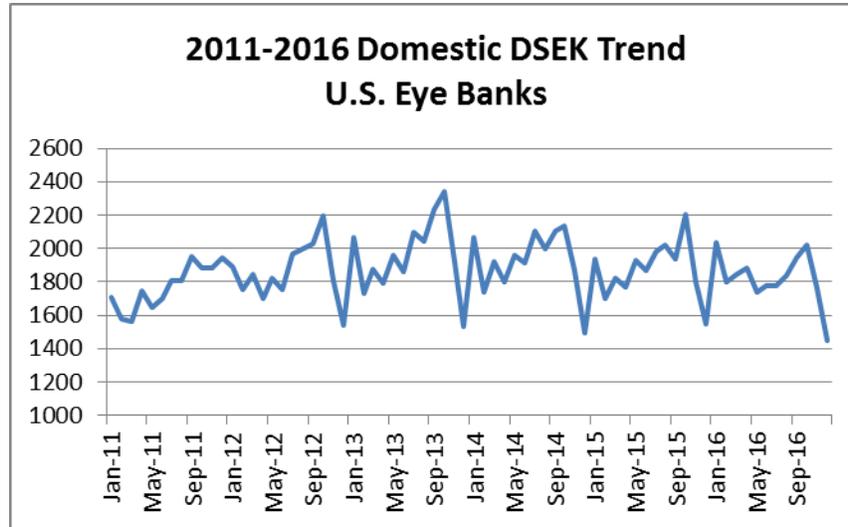
Intermediate-Term Tissue Domestic Distribution of Source Eye Bank Corneas		
	2016	2015
Intermediate-term preserved corneas processed into corneal segments	0	1
Number of intermediate-term preserved corneas segments produced	0	2
Intermediate-term preserved corneas, corneal segments or whole eyes transplanted in the U.S for:	49,869	48,792
PK	18,579	19,160
Optical or Elective PK	18,062	18,570
Emergency or Full Thickness	517	590
EK	28,327	27,208
DSEK, DSAEK, DLEK	21,868	22,514
DMEK or DMAEK	6,459	4,694
ALK	1,232	1,115
DALK (Deep Anterior Lamellar Keratoplasty)	1,101	1,018
SALK (Superficial Anterior Lamellar Keratoplasty)	14	26
Other ALK (e.g. peripheral, eccentric, etc.)	117	71
KLA	82	97
Keratoprosthesis (K-Pro)	279	323
Glaucoma shunt patch or other non-keratoplasty use	813	458
Other Keratoplasty (e.g. experimental surgery type)	54	12
Unknown or Unspecified	503	419



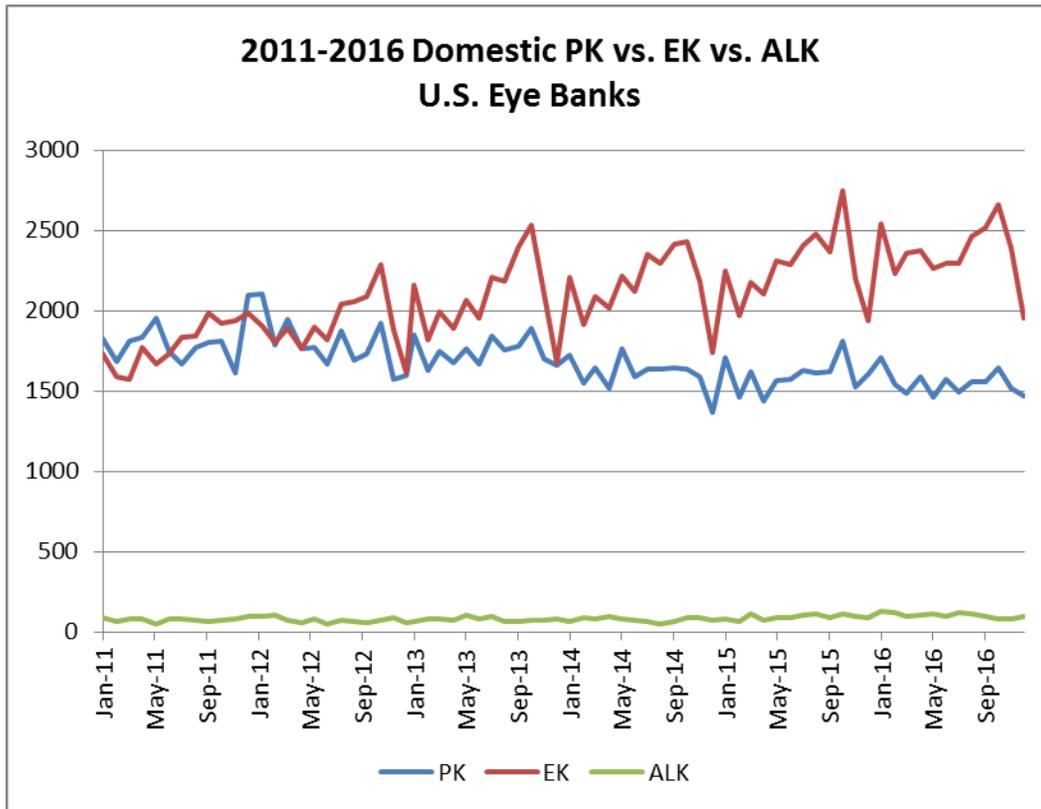
2016 Eye Banking Statistics Reported by U.S. Banks: Domestic Surgery Use of Intermediate-Term Preserved Tissue



2016 Eye Banking Statistics Reported by U.S. Banks: Domestic Surgery Use of Intermediate-Term Preserved Tissue

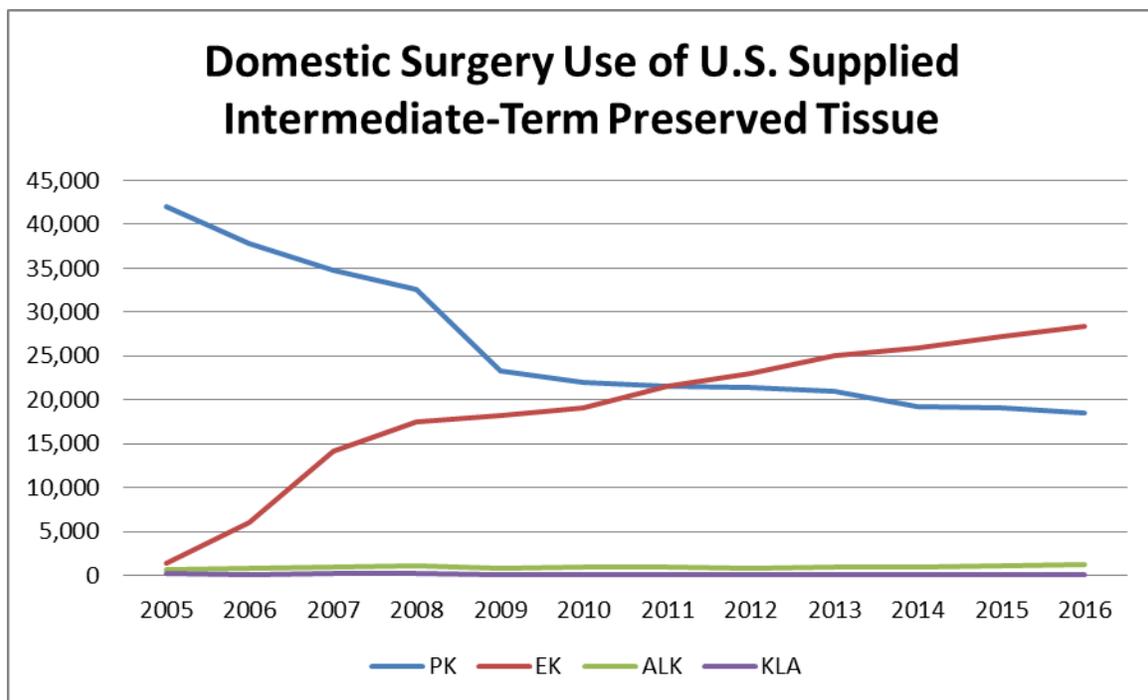


**2016 Eye Banking Statistics Reported by U.S. Banks:
Domestic Surgery Use of Intermediate-Term Preserved Tissue**



**Eye Banking Statistics Reported by U.S. Banks:
Domestic Use of Intermediate-Term Preserved Tissues
Annual Comparison 2005 - 2016**

Domestic Surgery Use	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Penetrating Keratoplasty	42,063	37,776	34,806	32,524	23,269	21,970	21,620	21,422	20,954	19,294	19,160	18,579
Endothelial Keratoplasty	1,398	6,027	14,159	17,468	18,221	19,159	21,555	23,049	24,987	25,965	27,208	28,327
Anterior Lamellar Keratoplasty	641	806	950	1,072	774	1,041	932	883	951	914	1,115	1,232
Keratolimbal Allograft	175	138	207	173	120	130	69	80	91	80	97	82



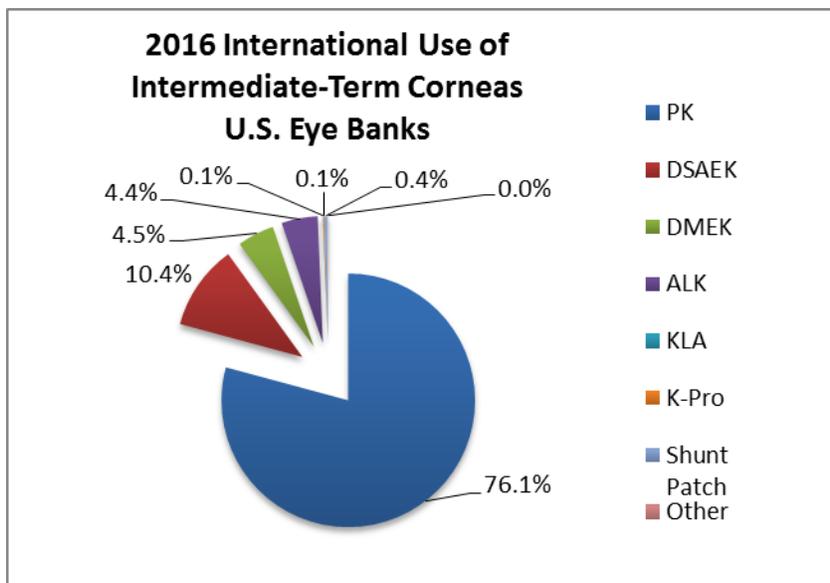
2016 Eye Banking Statistics Reported by U.S. Banks: Domestic Surgery Use of Intermediate-Term Preserved Tissue

U.S. Eye Banks												
Month	PK (Optical, Elective)	PK (Emerg.)	EK (DSEK)	EK (DMEK)	ALK (DALK)	ALK (SALK)	ALK (Other)	KLA	K- Pro	Shunt Patch	Other	Unknown
Jan. 2016	35.9%	2.0%	45.3%	11.2%	2.6%	0.0%	0.2%	0.1%	0.8%	1.2%	0.0%	0.5%
Feb. 2016	37.6%	0.6%	44.6%	10.6%	2.8%	0.0%	0.1%	0.1%	0.6%	1.6%	0.0%	1.5%
Mar. 2016	35.4%	0.8%	45.0%	12.4%	2.2%	0.0%	0.2%	0.1%	0.7%	2.0%	0.0%	1.2%
Apr. 2016	37.0%	0.8%	44.8%	11.7%	2.3%	0.0%	0.1%	0.2%	0.4%	1.0%	0.0%	1.6%
May 2016	35.3%	1.3%	43.6%	13.1%	2.5%	0.0%	0.3%	0.2%	0.5%	1.8%	0.0%	1.5%
Jun. 2016	37.7%	0.8%	43.6%	12.7%	2.4%	0.0%	0.1%	0.1%	0.6%	1.2%	0.0%	0.8%
Jul. 2016	35.7%	0.7%	43.3%	12.7%	2.8%	0.0%	0.1%	0.2%	0.7%	2.4%	0.1%	1.2%
Aug. 2016	35.3%	1.0%	42.9%	14.6%	2.1%	0.0%	0.5%	0.3%	0.4%	1.9%	0.0%	0.9%
Sep. 2016	34.8%	1.3%	45.1%	13.3%	1.7%	0.0%	0.5%	0.3%	0.5%	1.5%	0.0%	1.1%
Oct. 2016	35.8%	1.0%	45.2%	14.2%	1.5%	0.0%	0.2%	0.0%	0.4%	1.1%	0.4%	0.2%
Nov. 2016	36.0%	1.0%	42.9%	15.4%	1.5%	0.0%	0.4%	0.2%	0.6%	1.4%	0.2%	0.3%
Dec. 2016	38.6%	1.1%	39.2%	13.6%	2.4%	0.0%	0.1%	0.1%	0.5%	2.5%	0.4%	1.3%
2011 Avg.	45.7%	1.1%	45.9%	0.7%	1.4%	0.1%	0.5%	0.1%	0.7%	1.2%	0.0%	2.4%
2012 Avg.	45.1%	0.7%	47.8%	1.6%	1.6%	0.1%	0.2%	0.2%	0.5%	1.4%	0.1%	0.7%
2013 Avg.	42.8%	0.6%	48.7%	3.2%	1.8%	0.1%	0.1%	0.2%	0.5%	1.4%	0.0%	0.7%
2014 Avg.	39.7%	0.9%	48.6%	6.0%	1.8%	0.0%	0.1%	0.2%	0.5%	1.5%	0.0%	0.6%
2015 Avg.	38.1%	1.2%	46.1%	9.6%	2.1%	0.1%	0.1%	0.2%	0.7%	0.9%	0.0%	0.9%
2016 Avg.	36.2%	1.0%	43.9%	13.0%	2.2%	0.0%	0.2%	0.2%	0.6%	1.6%	0.1%	1.0%
Std. Dev.	1.2%	0.4%	1.7%	1.4%	0.4%	0.0%	0.1%	0.1%	0.1%	0.5%	0.1%	0.5%

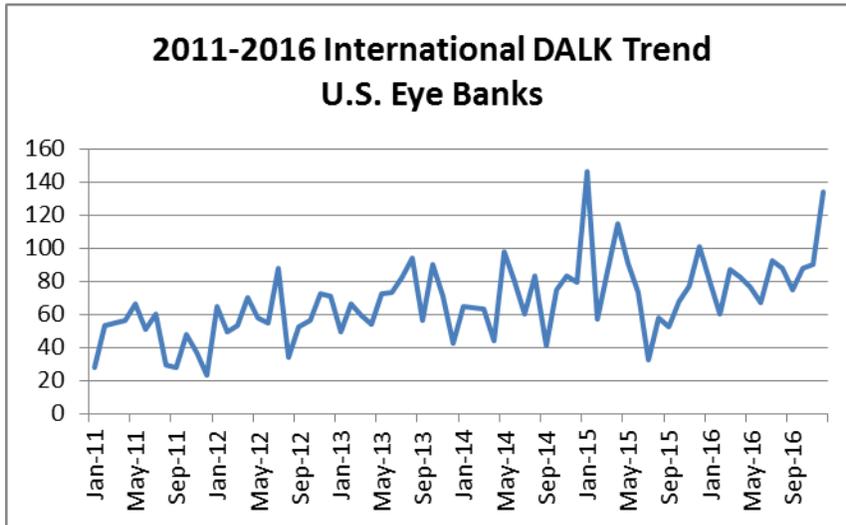
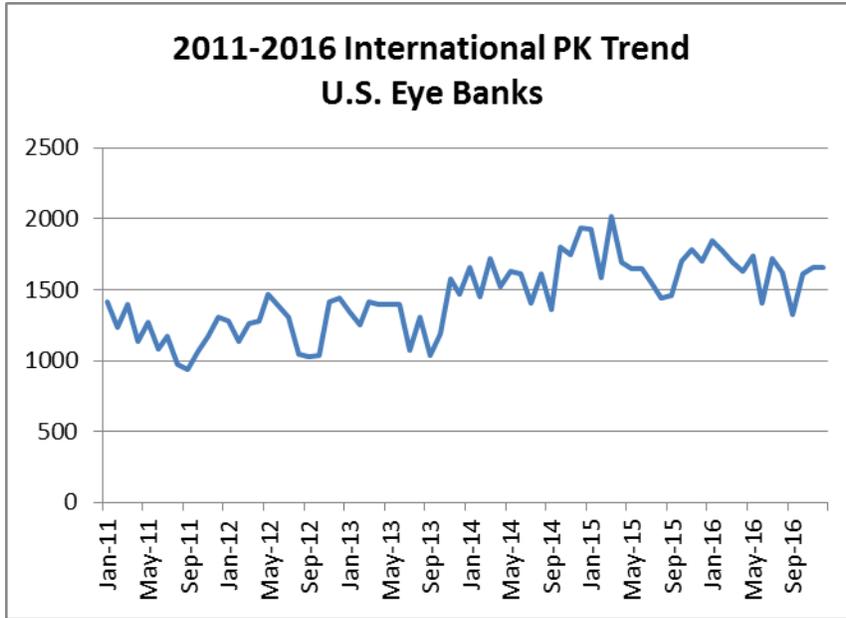
*Percentages read from this table should be read as "of the tissue distributed for transplant use domestically"

2016 Eye Banking Statistics Reported by U.S. Banks: International Surgery Use of Intermediate-Term Preserved Tissue

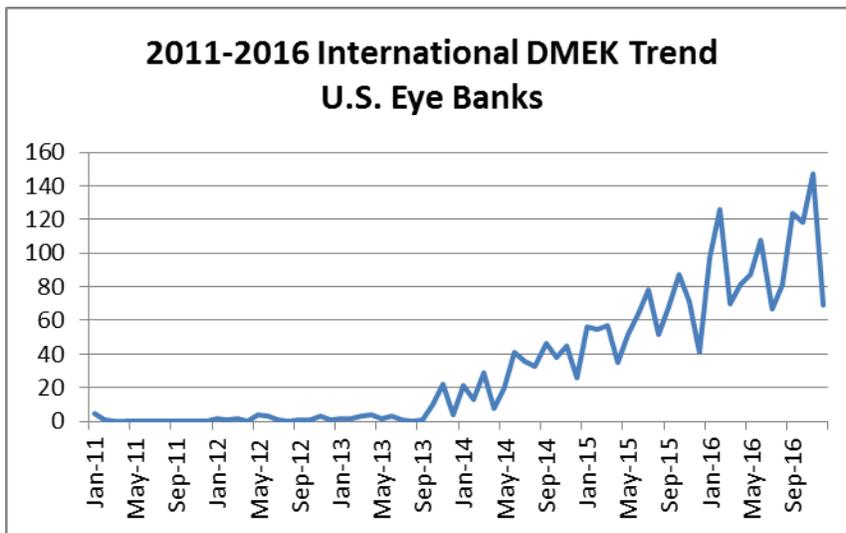
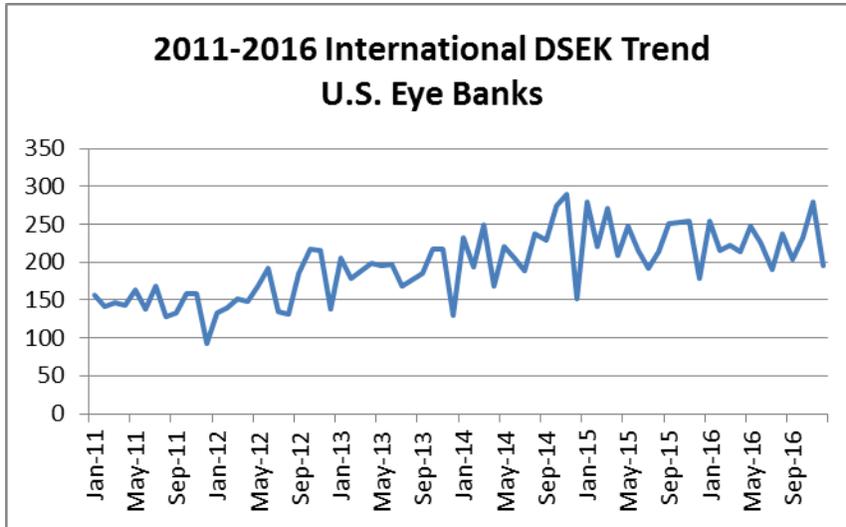
Intermediate-Term Tissue International Distribution of Source Eye Bank Corneas		
	2016	2015
Intermediate-term preserved corneas, corneal segments or whole eyes transplanted internationally for:	26,057	25,832
PK	19,834	20,394
Optical or Elective PK	19,675	20,132
Emergency or Full Thickness	159	262
EK	3,894	3,502
DSEK, DSAEK, DLEK	2,719	2,786
DMEK or DMAEK	1,175	716
ALK	1,154	1,086
DALK (Deep Anterior Lamellar Keratoplasty)	1,018	956
SALK (Superficial Anterior Lamellar Keratoplasty)	16	15
Other ALK (e.g. peripheral, eccentric, etc.)	119	115
KLA	15	10
Keratoprosthesis (K-Pro)	34	41
Glaucoma shunt patch or other non-keratoplasty use	104	69
Other Keratoplasty (e.g. experimental surgery type)	11	7
Unknown or Unspecified	1,011	723
Total intermediate-term preserved corneas, corneal segments, and whole eyes used for KERATOPLASY	75,009	74,097
Total intermediate-term preserved corneas, corneal segments, and whole eyes used for TRANSPLANT	75,926	74,623



**2016 Eye Banking Statistics Reported by U.S. Banks:
International Surgery Use of Intermediate-Term Preserved Tissue**



**2016 Eye Banking Statistics Reported by U.S. Banks:
International Surgery Use of Intermediate-Term Preserved Tissue**



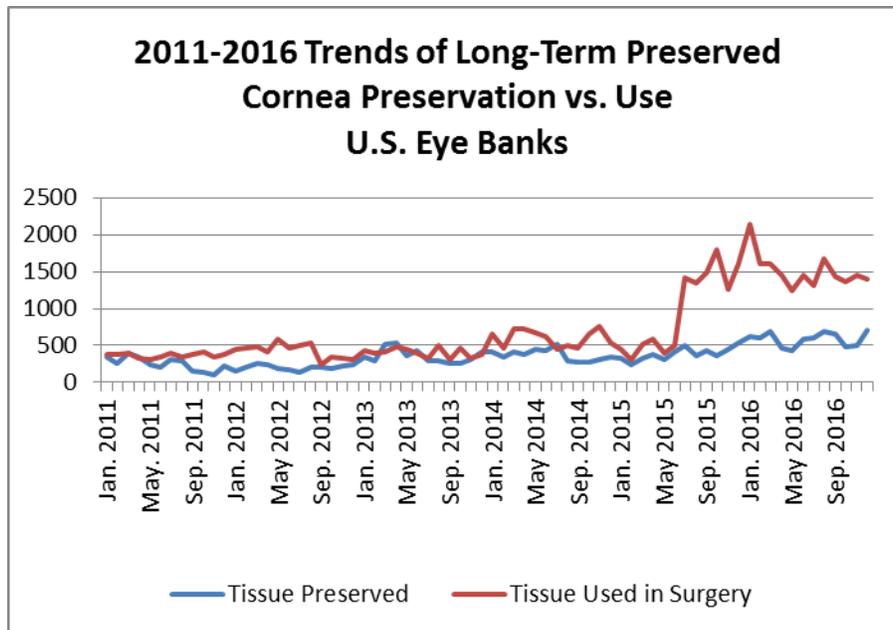
2016 Eye Banking Statistics Reported by U.S. Banks: International Surgery Use of Intermediate-Term Preserved Tissue

U.S. Eye Banks												
Month	PK (Optical, Elective)	PK (Emerg.)	EK (DSEK)	EK (DMEK)	ALK (DALK)	ALK (SALK)	ALK (Other)	KLA	K- Pro	Shunt Patch	Other	Unknown
Jan. 2016	77.8%	0.7%	10.7%	4.1%	3.4%	0.0%	0.2%	0.1%	0.1%	0.3%	0.0%	2.6%
Feb. 2016	77.8%	0.9%	9.5%	5.5%	2.6%	0.0%	0.4%	0.0%	0.0%	0.3%	0.0%	3.0%
Mar. 2016	78.6%	0.7%	10.3%	3.2%	4.0%	0.0%	0.6%	0.1%	0.1%	0.2%	0.0%	2.2%
Apr. 2016	77.8%	0.9%	10.2%	3.9%	3.9%	0.1%	0.6%	0.0%	0.5%	0.1%	0.0%	2.0%
May 2016	77.1%	0.5%	11.0%	3.9%	3.4%	0.0%	0.6%	0.0%	0.0%	0.3%	0.0%	3.1%
Jun. 2016	73.6%	0.4%	11.8%	5.7%	3.5%	0.0%	0.6%	0.1%	0.1%	0.4%	0.0%	3.9%
Jul. 2016	79.2%	0.4%	8.8%	3.1%	4.2%	0.0%	0.6%	0.1%	0.1%	0.5%	0.0%	3.0%
Aug. 2016	75.2%	0.6%	11.0%	3.8%	4.1%	0.0%	0.0%	0.0%	0.2%	0.2%	0.0%	4.8%
Sep. 2016	71.2%	0.4%	11.0%	6.7%	4.0%	0.0%	0.3%	0.1%	0.2%	0.8%	0.0%	5.3%
Oct. 2016	73.9%	0.7%	10.6%	5.4%	4.0%	0.0%	0.3%	0.1%	0.0%	0.8%	0.1%	3.9%
Nov. 2016	70.3%	0.2%	11.8%	6.2%	3.8%	0.1%	0.3%	0.1%	0.3%	0.9%	0.3%	5.6%
Dec. 2016	73.0%	0.8%	8.6%	3.0%	5.9%	0.5%	1.0%	0.0%	0.0%	0.0%	0.0%	7.1%
2011 Avg.	77.3%	2.0%	9.4%	0.0%	2.9%	0.5%	1.3%	0.1%	0.1%	0.2%	0.0%	6.1%
2012 Avg.	77.1%	1.1%	10.0%	0.1%	3.7%	0.1%	1.2%	0.1%	0.1%	0.1%	0.0%	6.4%
2013 Avg.	78.4%	1.0%	11.2%	0.3%	4.0%	0.2%	1.0%	0.1%	0.2%	0.1%	0.1%	3.5%
2014 Avg.	79.4%	0.7%	10.8%	1.5%	3.4%	0.0%	0.8%	0.0%	0.1%	0.2%	0.0%	3.0%
2015 Avg.	77.9%	1.0%	10.8%	2.8%	3.7%	0.1%	0.4%	0.0%	0.2%	0.3%	0.0%	2.8%
2016 Avg.	75.5%	0.6%	10.4%	4.5%	3.9%	0.1%	0.5%	0.1%	0.1%	0.4%	0.0%	3.9%
Std. Dev.	3.0%	0.2%	1.0%	1.3%	0.8%	0.1%	0.3%	0.0%	0.1%	0.3%	0.1%	1.6%

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

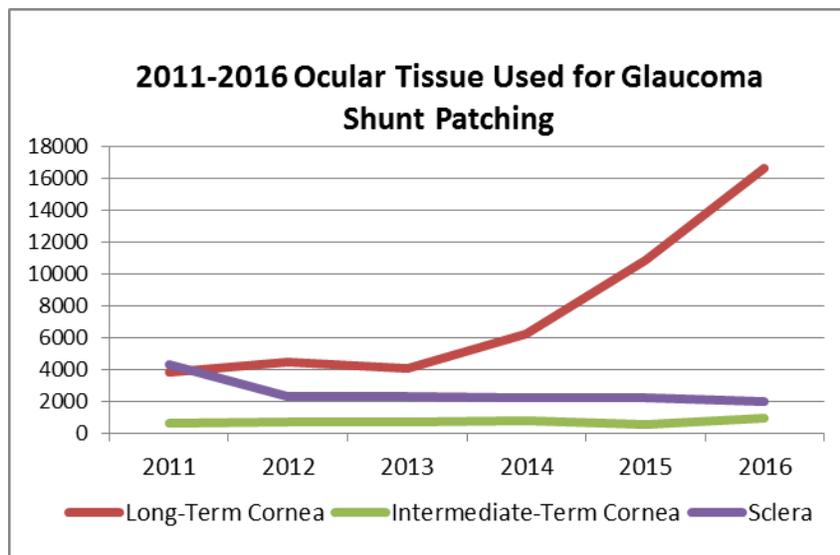
2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Long-Term Preserved Tissue Distribution

Long-Term Preserved Tissue Preservation and Distribution		
	2016	2015
Long-term preserved corneas or whole globes PRESERVED for transplant	7,068	4,681
Long-term preserved corneas, corneal segments, or whole globes DISTRIBUTED for:	18,133	11,672
Keratoplasty	1,335	737
Glaucoma Shunt patching	16,683	10,843
Other Surgical Uses	115	92
Long-term preserved corneas, corneal segments, or whole globes FORWARDED to another entity for final distribution	812	705
Sclera or sclera segments PRESERVED for transplantation	3,990	3,362
Sclera or sclera segments DISTRIBUTED for:	3,380	3,225
Prosthesis following enucleation	852	822
Glaucoma shunt patching	1,944	2,175
Other surgical uses	584	228
Sclera or sclera segments FORWARDED to another entity for final distribution	244	361

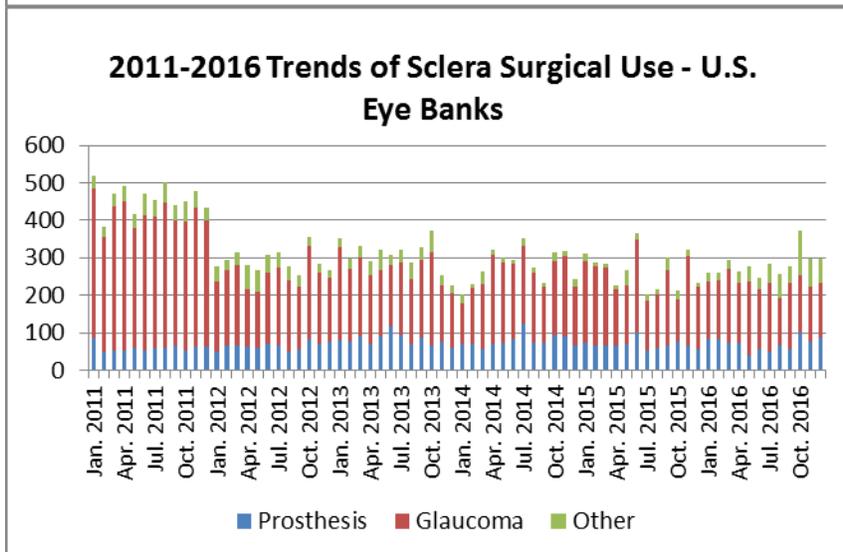
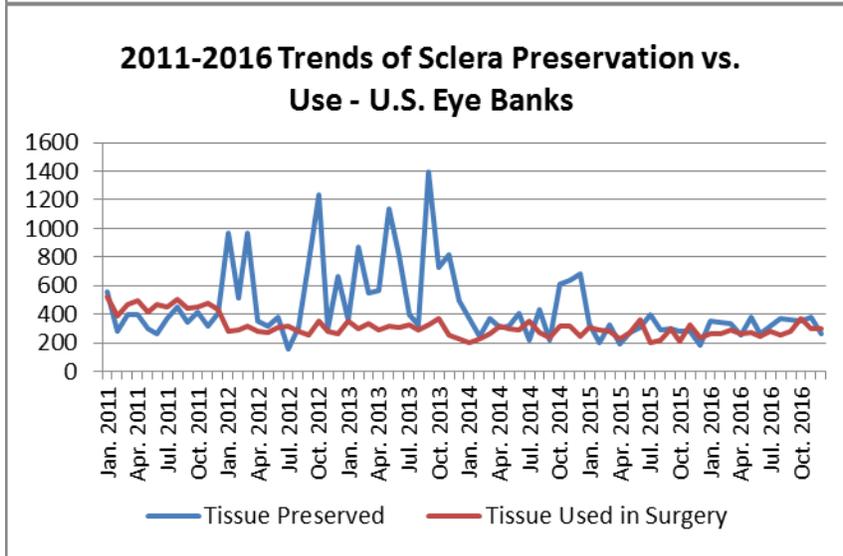
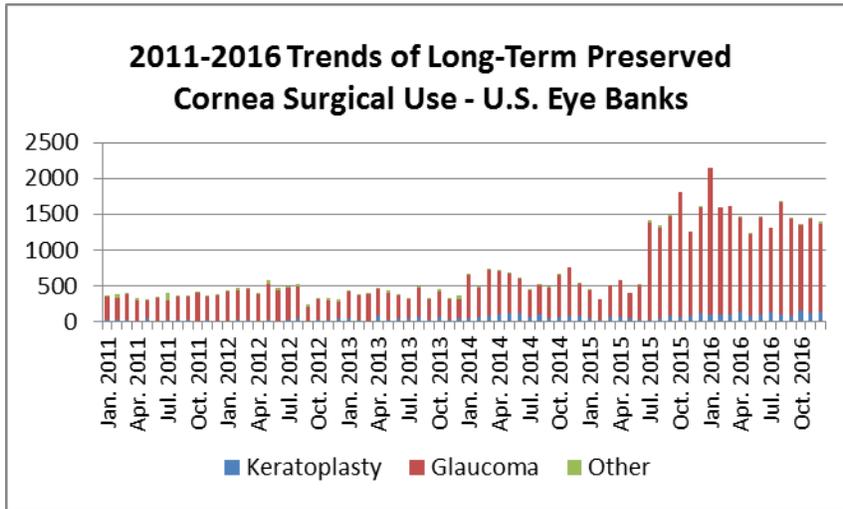


2016 Eye Banking Statistics Reported by U.S. Banks: Long-Term Preserved Tissue Distribution

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. 2016	655	91	2052	2	372	85	153	21
Feb. 2016	609	96	1505	0	343	83	156	21
Mar. 2016	691	96	1509	0	336	73	197	24
Apr. 2016	463	129	1320	8	257	74	159	29
May 2016	431	90	1134	13	380	40	196	40
Jun. 2016	587	108	1337	11	263	57	158	30
Jul. 2016	603	135	1174	0	313	48	184	52
Aug. 2016	688	105	1562	9	372	68	124	65
Sep. 2016	657	87	1349	4	358	57	176	45
Oct. 2016	483	150	1189	15	356	101	153	117
Nov. 2016	501	116	1326	13	378	78	144	76
Dec. 2016	700	132	1226	40	262	88	144	64
2011 Total	3017	276	3802	331	4489	714	4285	508
2012 Total	2454	305	4435	355	6913	777	2260	460
2013 Total	4294	499	4040	301	8452	978	2293	422
2014 Total	4420	938	6212	73	4810	939	2199	207
2015 Total	4681	737	10843	92	3362	822	2175	228
2016 Total	7068	1335	16683	115	3990	852	1944	584
2016 Avg.	589	111	1390	10	333	71	162	49
Std. Dev.	96	21	250	11	47	18	22	28

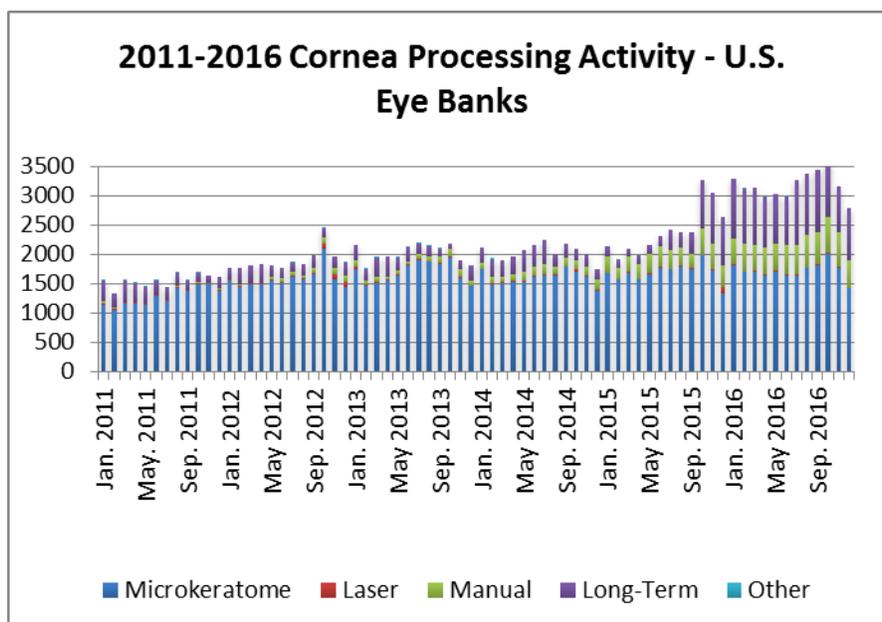
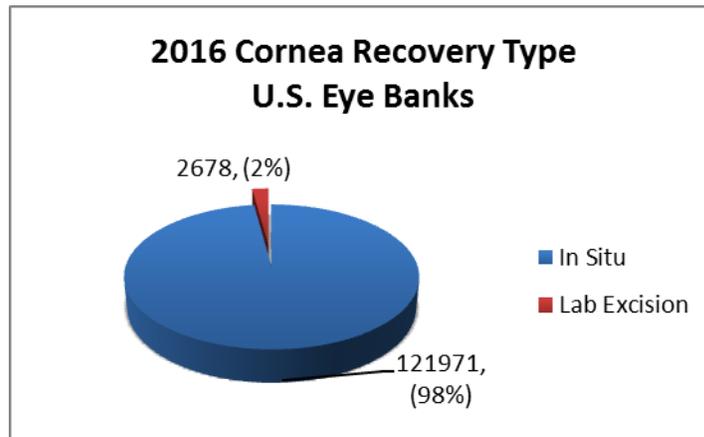


2016 Eye Banking Statistics Reported by U.S. Banks: Long-Term Preserved Tissue Distribution



2016 Eye Banking Statistics Reported by U.S. Banks: Tissue Processing for Transplant

Tissue Processing for Transplant		
	2016	2015
Eye Processing (does not include in situ excision)	2,678	2,437
Processed for corneal preservation only	172	318
Processed for sclera preservation	2,491	1,562
Processed for other ocular materials	15	557
Cornea Processing	38,180	28,660
Processed by microkeratome	20,604	20,193
Processed by laser	154	262
Processed by hand dissection	6,071	3,759
Processed by transfer into long-term preservation	11,346	4,440
Processed by other methods	5	6

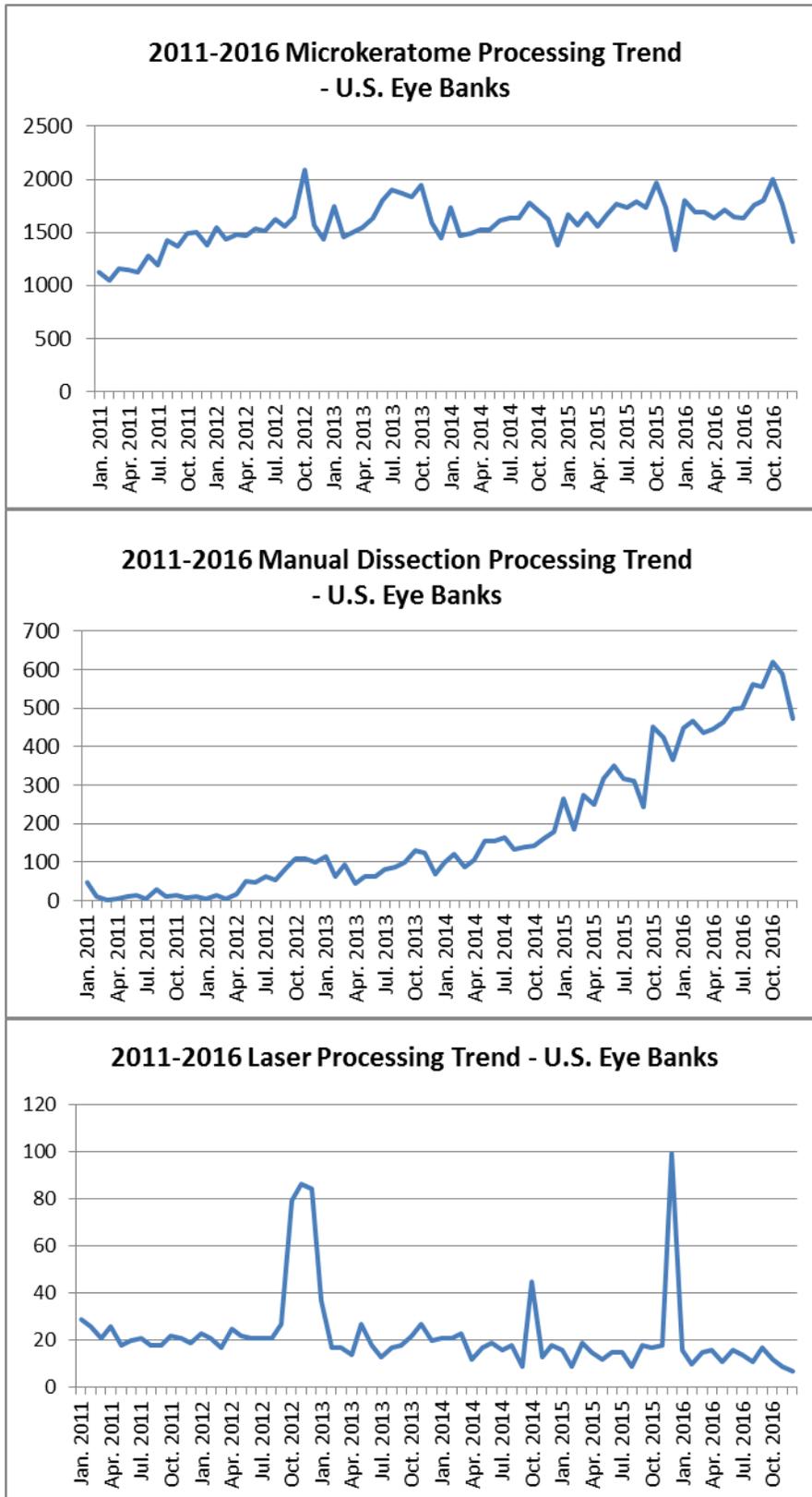


2016 Eye Banking Statistics Reported by U.S. Banks: Tissue Processing for Transplant

U.S. Eye Banks					
Month	Processing - Microkeratome	Processing - Laser	Processing - Manual	Processing - Long-Term Preservation	Processing - Other
Jan. 2016	1846	16	458	1016	0
Feb. 2016	1695	10	467	943	1
Mar. 2016	1694	15	436	993	0
Apr. 2016	1639	16	446	879	2
May 2016	1707	11	463	838	0
Jun. 2016	1641	16	498	830	1
Jul. 2016	1634	14	501	1113	0
Aug. 2016	1762	11	562	1028	0
Sep. 2016	1804	17	556	1069	0
Oct. 2016	2001	12	621	954	1
Nov. 2016	1769	9	589	783	0
Dec. 2016	1412	7	474	900	0
2011 Total					
	15227	259	164	2790	15
2012 Total					
	18900	447	658	2583	11
2013 Total					
	20267	247	1037	2582	35
2014 Total					
	19124	232	1649	3304	38
2015 Total					
	20193	262	3759	4440	6
2016 Total					
	20604	154	6071	11346	5
2016 Avg.					
	1717	13	506	946	0
Std. Dev.					
	142	3	61	102	1

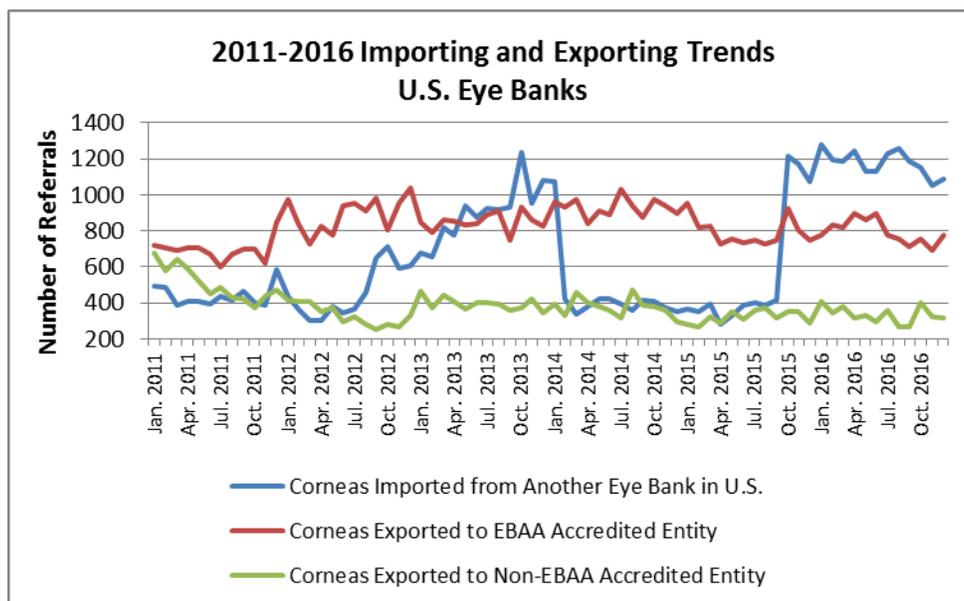
	2011	2012	2013	2014	2015	2016	Trends
Processing Events	18455	22599	24168	24347	28660	38180	
Failed Processing	431	621	726	828	1016	1281	
Failure Rate	2.3%	2.7%	3.0%	3.4%	3.5%	3.4%	

2016 Eye Banking Statistics Reported by U.S. Banks: Tissue Processing for Transplant



2016 Eye Banking Statistics Reported by U.S. Banks: Forwarded Tissue

Month	Imported Tissue	Exported Tissue (to EBAA Accred.)	Exported Tissue (to non-EBAA Accred.)
Jan. 2016	1279	829	440
Feb. 2016	1192	831	342
Mar. 2016	1183	816	382
Apr. 2016	1245	894	319
May 2016	1129	861	328
Jun. 2016	1133	894	294
Jul. 2016	1230	778	357
Aug. 2016	1255	758	270
Sep. 2016	1189	713	268
Oct. 2016	1151	757	400
Nov. 2016	1055	693	322
Dec. 2016	1085	779	320
2011 Total	5265	8330	6092
2012 Total	5523	10715	4003
2013 Total	10777	10189	4764
2014 Total	5386	11158	4543
2015 Total	6780	9507	3867
2016 Total	14126	9603	4042
2016 Avg.	1177	800	337
Std. Dev.	69	65	51

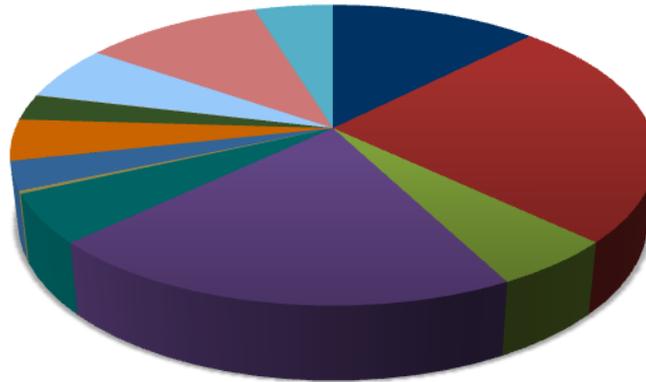


2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

Indications for Penetrating Keratoplasty	2016		2015	
A. Post-cataract surgery edema	2,729	7.1%	2,905	7.3%
B. Keratoconus	5,463	14.2%	5,835	14.8%
C. Fuchs' Dystrophy	1,171	3.0%	1,235	3.1%
D. Repeat Corneal Transplant	4,529	11.8%	4,267	10.8%
E. Other degenerations or dystrophies	1,164	3.0%	1,148	2.9%
F. Post-refractive surgery	70	0.2%	55	0.1%
G. Microbial changes	677	1.8%	689	1.7%
H. Mechanical or chemical trauma	982	2.6%	1,180	3.0%
I. Congenital opacities	620	1.6%	672	1.7%
J. Pterygium	10	0.0%	15	0.0%
K. Non-infectious ulcerative keratitis or perforation	1,301	3.4%	1,357	3.4%
L. Other causes of corneal dysfunction or distortion (non-endothelial)	2,346	6.1%	2,633	6.7%
M. Other causes of endothelial dysfunction	1,035	2.7%	1,189	3.0%
Z. Unknown, unreported, or unspecified	16,316	42.5%	16,373	41.4%
Total Indications for Penetrating Keratoplasty	38,413		39,554	
Indications for Anterior Lamellar Keratoplasty	2016		2015	
B. Keratoconus	732	30.7%	844	38.3%
D. Repeat Corneal Transplant	38	1.6%	50	2.3%
E. Other degenerations or dystrophies	88	3.7%	89	4.0%
F. Post-refractive surgery	4	0.2%	17	0.8%
G. Microbial changes	36	1.5%	56	2.5%
H. Mechanical or chemical trauma	31	1.3%	53	2.4%
I. Congenital opacities	25	1.0%	41	1.9%
J. Pterygium	3	0.1%	5	0.2%
K. Non-infectious ulcerative keratitis or perforation	62	2.6%	82	3.7%
L. Other causes of corneal dysfunction or distortion	191	8.0%	171	7.8%
Z. Unknown, unreported, or unspecified	1,176	49.3%	793	36.0%
Total for Anterior Keratoplasty	2,386		2,201	
Indications for Endothelial Keratoplasty	2016		2015	
A. Post-Cataract Surgery Edema	5,558	17.2%	5,385	17.5%
C. Fuchs' Dystrophy	15,845	49.2%	14,472	47.1%
D. Repeat Corneal Transplant	2,822	8.8%	2,613	8.5%
M. Other Causes of Endothelial Dysfunction	2,882	8.9%	3,208	10.4%
Z. Unknown, unreported, or unspecified	5,114	15.9%	5,032	16.4%
Total for Endothelial Keratoplasty	32,221		30,710	

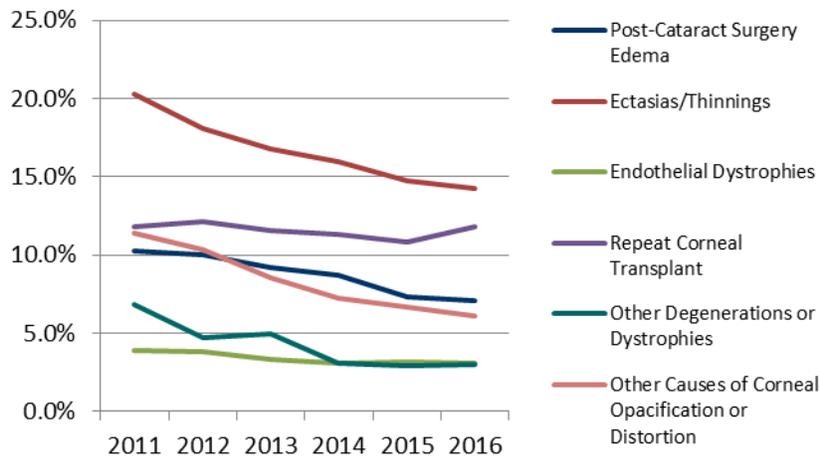
2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

2016 Known Indications for Penetrating Keratoplasty - U.S. Eye Banks



- Post-Cataract Surgery Edema
- Ectasias/Thinnings
- Endothelial Dystrophies
- Repeat Corneal Transplant
- Other Degeneration or Dystrophies
- Refractive
- Microbial Keratitis
- Mechanical (Non-Surgical) or Chemical Trauma
- Congenital Opacities
- Pterygium
- Non-infectious Ulcerative Keratitis, Thinning, or Perforation
- Other Causes of Corneal Opacification or Distortion
- Other Causes of Endothelial Dysfunction

2011-2016 Trends in Common PK Surgical Indications - U.S. Eye Banks



2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

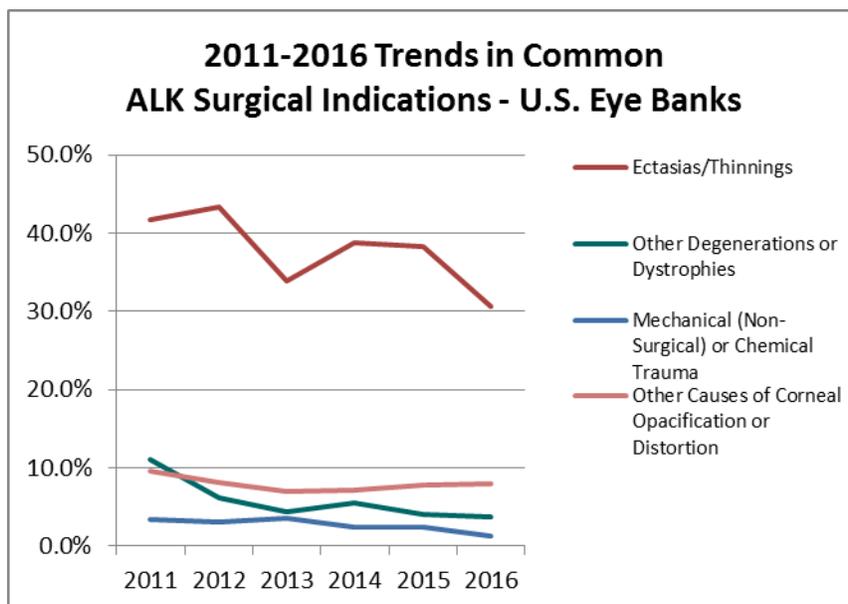
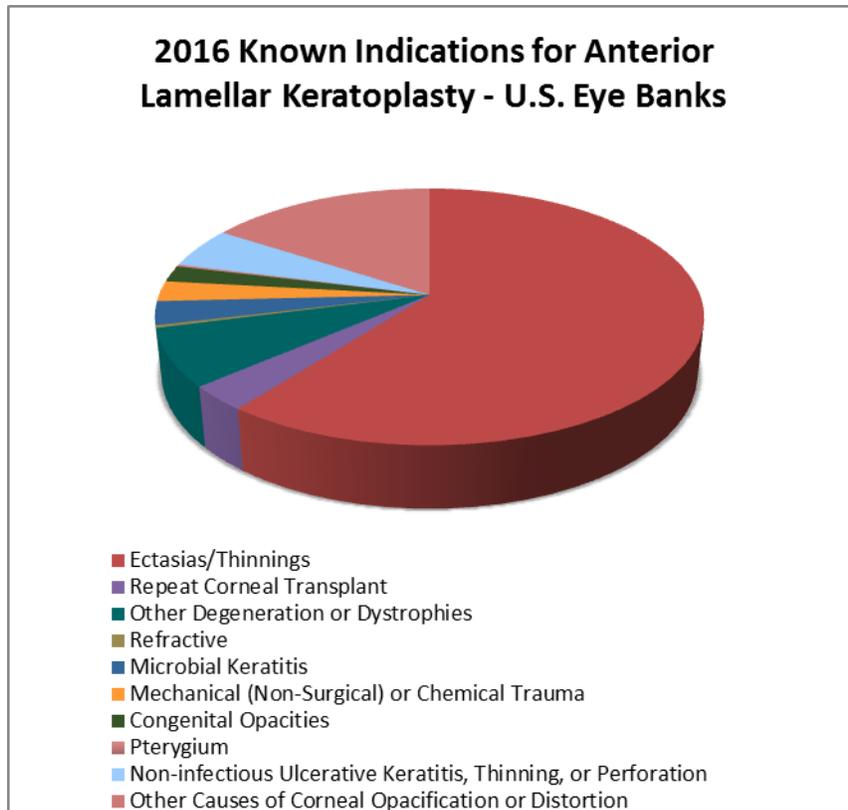
Indications for Penetrating Keratoplasty - U.S. Eye Banks														
Year	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
2011														
Avg.	10.3%	20.3%	3.9%	11.8%	6.8%	0.3%	2.3%	2.7%	1.6%	0.1%	2.9%	11.4%	2.9%	22.8%
2012														
Avg.	10.0%	18.1%	3.8%	12.1%	4.7%	0.2%	2.5%	3.5%	1.8%	0.0%	3.3%	10.3%	3.1%	26.6%
2013														
Avg.	9.2%	16.8%	3.3%	11.5%	4.9%	0.3%	2.1%	3.0%	1.9%	0.0%	2.9%	8.5%	3.3%	32.2%
2014														
Avg.	8.7%	16.0%	3.1%	11.3%	3.1%	0.2%	2.1%	2.9%	2.1%	0.0%	3.1%	7.2%	3.7%	36.6%
2015														
Avg.	7.3%	14.8%	3.1%	10.8%	2.9%	0.1%	1.7%	3.0%	1.7%	0.0%	3.4%	6.7%	3.0%	41.4%
2016														
Avg.	7.1%	14.2%	3.0%	11.8%	3.0%	0.2%	1.8%	2.6%	1.6%	0.0%	3.4%	6.1%	2.7%	42.5%
Std. Dev.	1.0%	1.0%	0.6%	0.9%	0.6%	0.1%	0.2%	0.4%	0.2%	0.0%	0.4%	0.6%	0.6%	2.7%

*Percentages read from this table should be read as "of the tissue used for PK"

Indications for Anterior Lamellar Keratoplasty - U.S. Eye Banks														
Month	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
2011														
Avg.		41.6%		2.6%	11.1%	0.7%	1.2%	3.3%	1.4%	0.3%	3.8%	9.6%		24.4%
2012														
Avg.		43.4%		1.6%	6.2%	0.3%	1.9%	3.0%	1.5%	0.2%	4.2%	8.1%		29.6%
2013														
Avg.		33.8%		1.9%	4.4%	0.6%	2.5%	3.5%	1.8%	0.2%	2.8%	6.9%		41.4%
2014														
Avg.		38.8%		1.4%	5.5%	0.4%	1.6%	2.4%	1.4%	0.3%	2.6%	7.2%		38.5%
2015														
Avg.		38.3%		2.3%	4.0%	0.8%	2.5%	2.4%	1.9%	0.2%	3.7%	7.8%		36.0%
2016														
Avg.		30.7%		1.6%	3.7%	0.2%	1.5%	1.3%	1.0%	0.1%	2.6%	8.0%		49.3%
Std. Dev.		4.0%		1.2%	2.0%	0.3%	0.9%	1.4%	0.6%	0.4%	1.0%	2.9%		7.8%

*Percentages read from this table should be read as "of the tissue used for ALK"

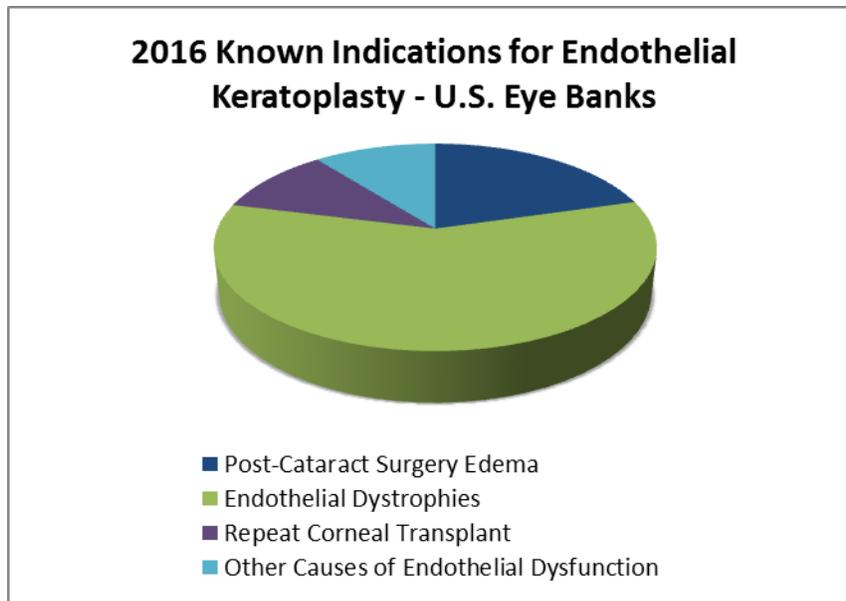
2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks



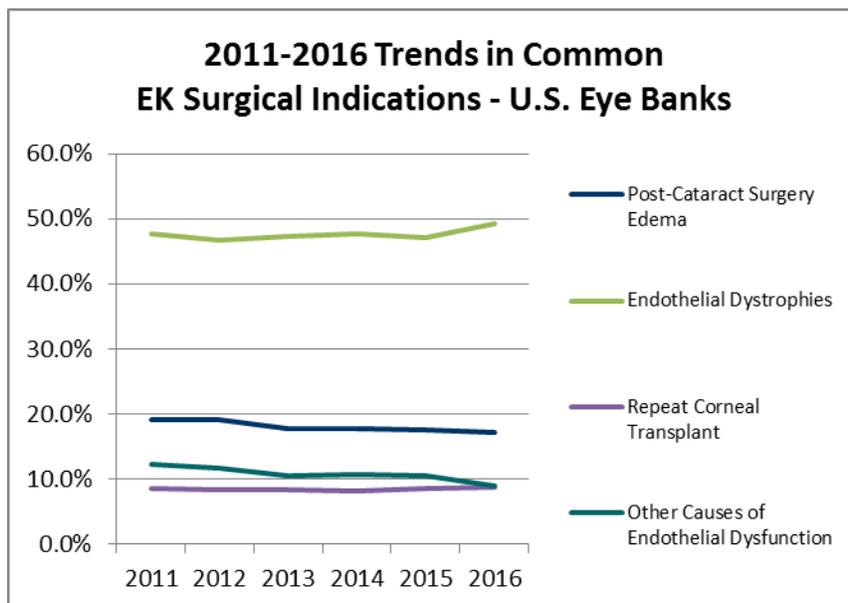
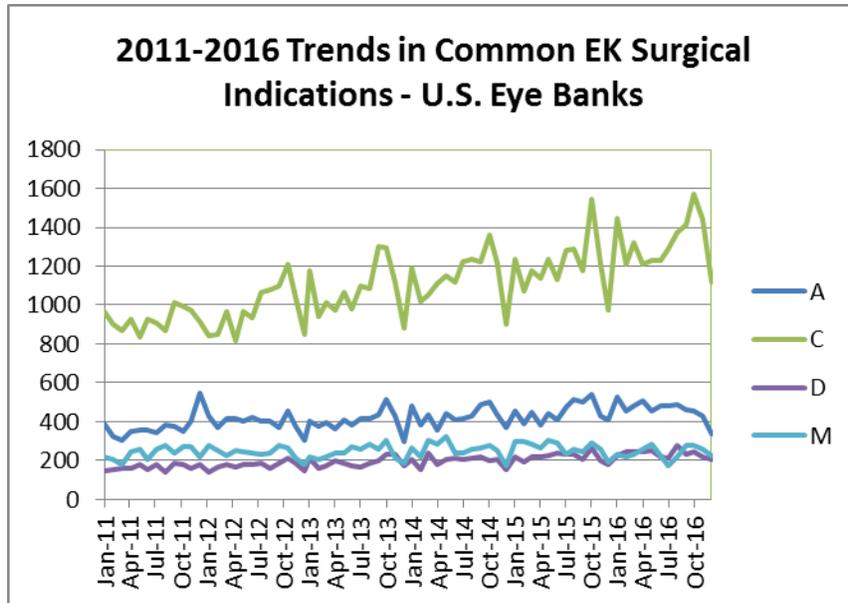
2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

Indications for Endothelial Keratoplasty - U.S. Eye Banks														
Year	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
2011														
Avg.	19.2%		47.7%	8.5%									12.3%	12.4%
2012														
Avg.	19.1%		46.8%	8.3%									11.6%	14.2%
2013														
Avg.	17.8%		47.3%	8.4%									10.6%	15.9%
2014														
Avg.	17.8%		47.7%	8.2%									10.7%	15.6%
2015														
Avg.	17.5%		47.1%	8.5%									10.4%	16.4%
2016														
Avg.	17.2%		49.2%	8.8%									8.9%	15.9%
Std. Dev.	1.4%		2.1%	0.8%									1.1%	1.2%

*Percentages read from this table should be read as "of the tissue used for EK"

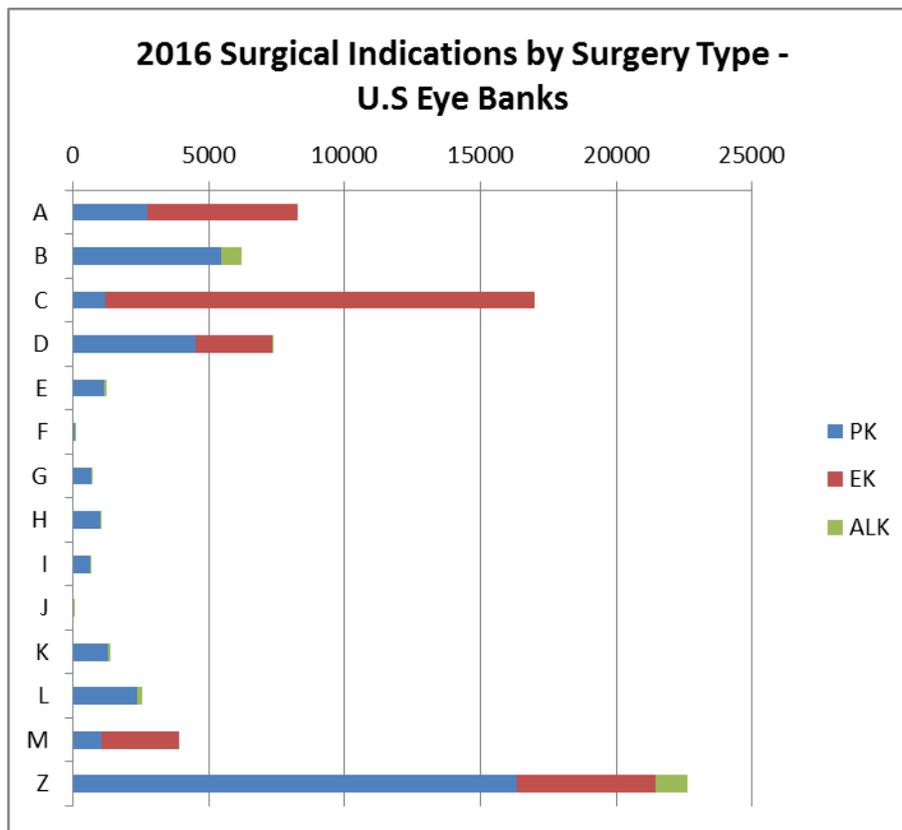


2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks



2016 U.S. Eye Banking Statistics Reported by U.S. Banks: Indications for Corneal Transplant Reported by U.S. Banks

Surgical Indications for Keratoplasty - U.S. Eye Banks														
	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
PK	2729	5463	1171	4529	1164	70	677	982	620	10	1301	2346	1035	16316
EK	5558		15845	2822									2882	5114
ALK		732		38	88	4	36	31	25	3	62	191		1176



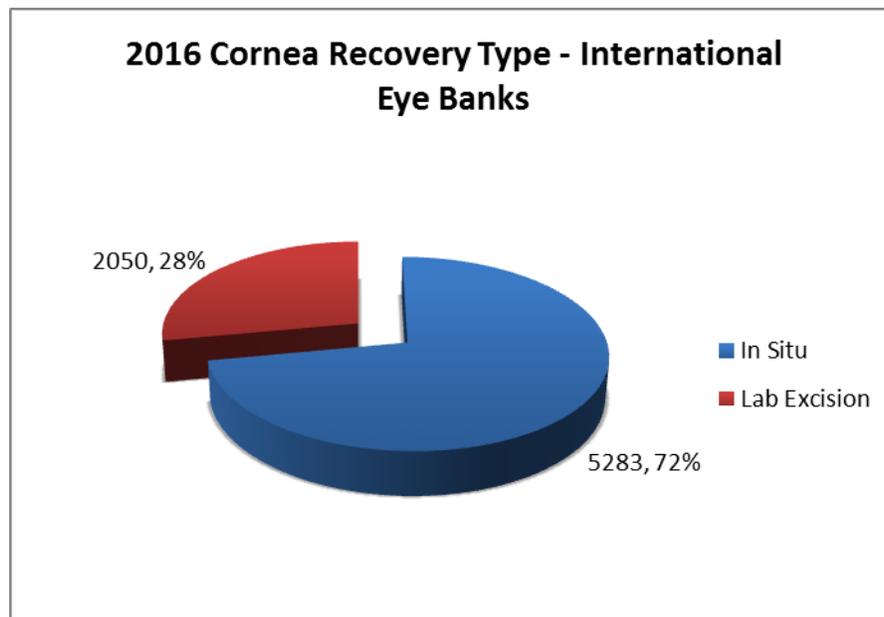
- A - Post-Cataract Surgery Edema
- B - Ectasias/Thinnings
- C - Endothelial Dystrophies
- D - Repeat Corneal Transplant
- E - Other Degeneration or Dystrophies
- F - Refractive
- G - Microbial Keratitis
- H - Mechanical (Non-Surgical) or Chemical Trauma
- I - Congenital Opacities
- J - Pterygium
- K - 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

2016
Eye Banking Statistics
From EBAA
International Members

2016 International Eye Banking Statistics Donations and Tissue Recoveries

Donations	2016	2015	2014	2013	2012
Number of Eye Banks Reporting	11	10	10	10	8
Total Whole Eyes and Corneas Donated	7,520	6,846	6,769	6,482	6,330
Total Number of Donors	3,776	3,466	3,398	3,305	3,177

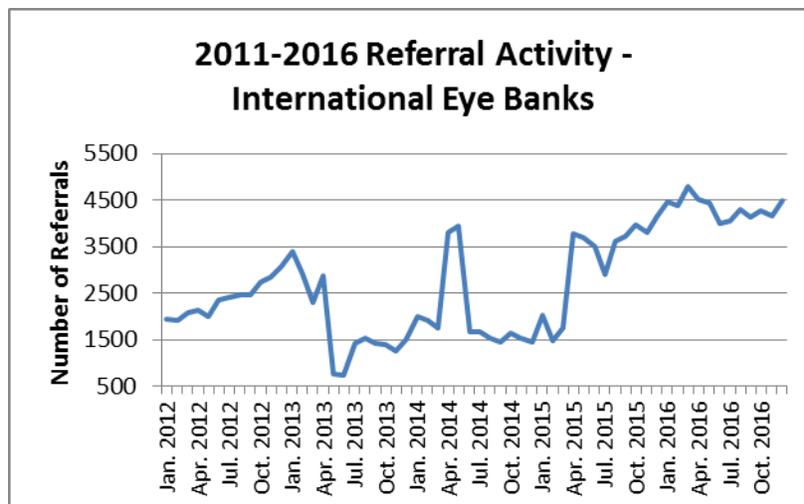
Death Referrals	2016	2015	2014
Total Death Referrals	51,946	38,418	24,284
Death referrals Determined Eligible	12,333	9,651	5,121
Tissue Recoveries			
Total Donors	3,776	3,466	3,398
Donors recovered not found on donor registry or known to have first person consent	2,451	3,342	3,302
Donors recovered found on donor registry or known to have first person consent	1,325	124	96
Eyes or Corneas Recovered with Intent for Surgical Use	7,333	6,403	5,726
Eyes or Corneas Recovered for Other Uses	187	443	1,043



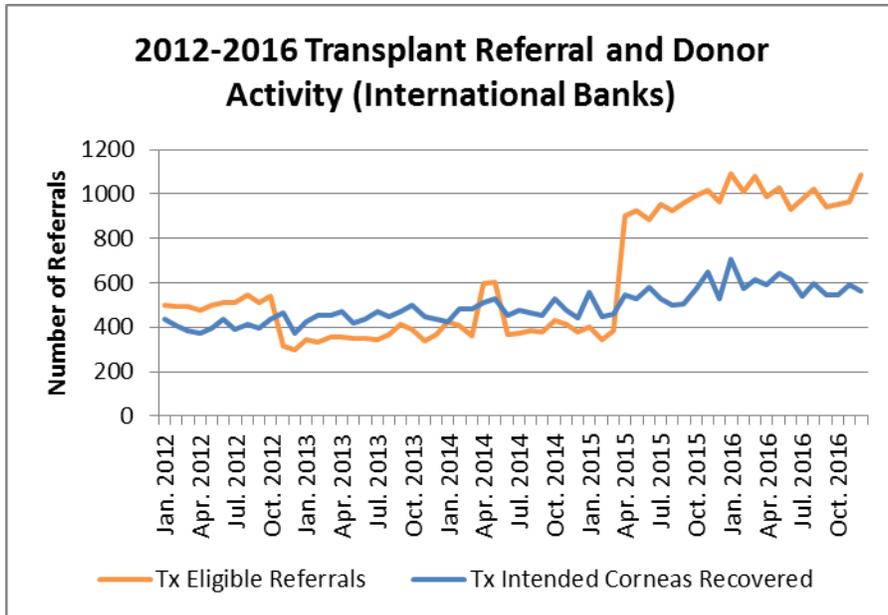
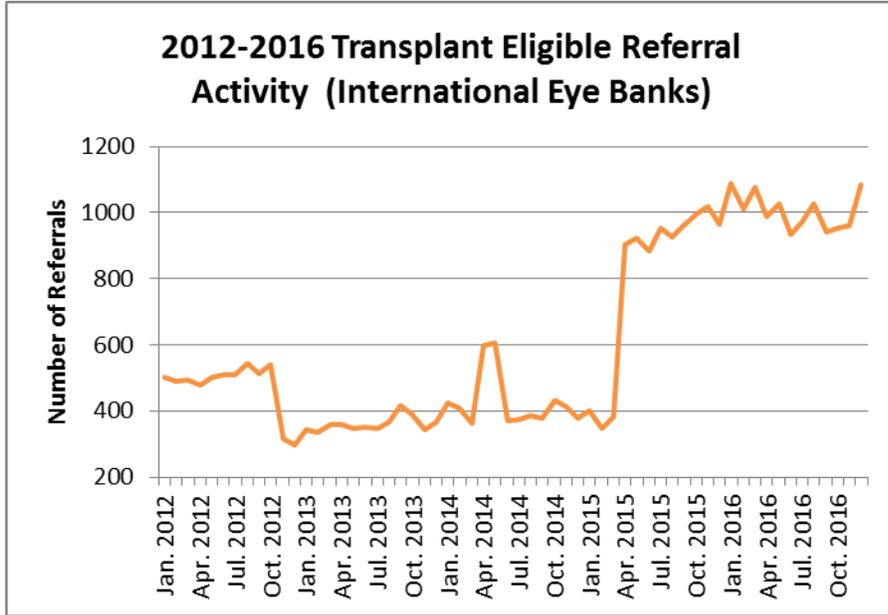
2016 International Eye Banking Statistics Referral Trends, Transplant and Conversion Rates

Month	Transplant Rate	Conversion Rate	Death Referrals	Transplant Eligible Referrals	Transplant Intended Corneas Recovered
Jan. 2016	55.2%	32.9%	4456	1109	726
Feb. 2016	60.2%	29.0%	4387	1034	596
Mar. 2016	52.3%	29.4%	4813	1116	648
Apr. 2016	58.3%	30.7%	4517	1011	617
May 2016	54.6%	31.3%	4437	1052	656
Jun. 2016	54.6%	33.4%	4000	970	646
Jul. 2016	55.9%	28.0%	4039	1008	562
Aug. 2016	55.6%	30.1%	4316	1079	648
Sep. 2016	60.3%	29.2%	4122	957	557
Oct. 2016	59.4%	28.2%	4246	958	540
Nov. 2016	56.2%	30.4%	4150	962	584
Dec. 2016	48.6%	25.7%	4463	1077	553
2012 Total	64.7%	43.3%	28391	5695	4910
2013 Total	64.8%	64.1%	21516	4314	5427
2014 Total	66.9%	56.1%	24284	5121	5726
2015 Total	59.5%	33.6%	38418	9651	6403
2016 Total	55.9%	29.9%	51946	12333	7333
2016 Avg.	N/A	N/A	4329	1028	611
Std. Dev.	3.4%	2.1%	232	59	56

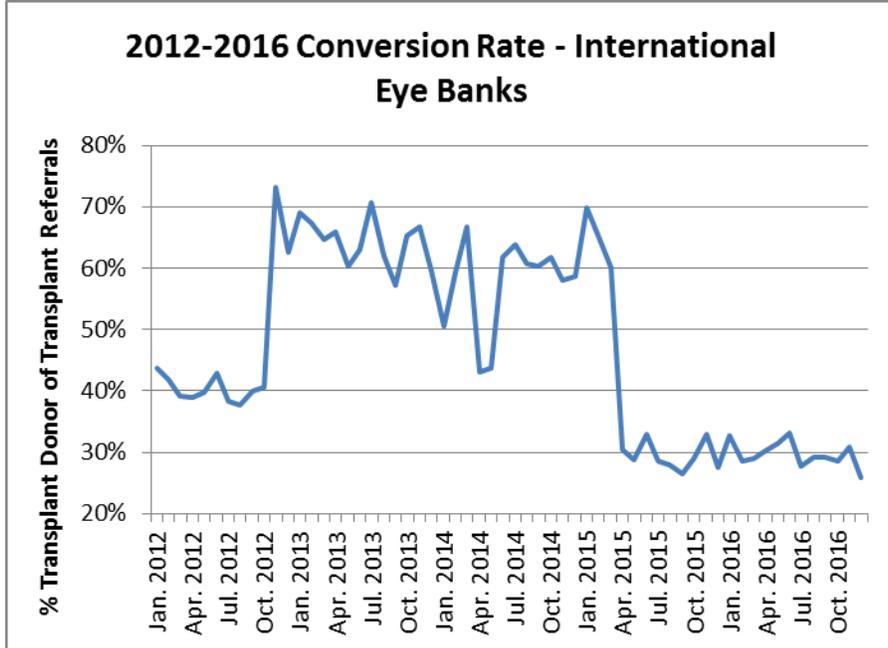
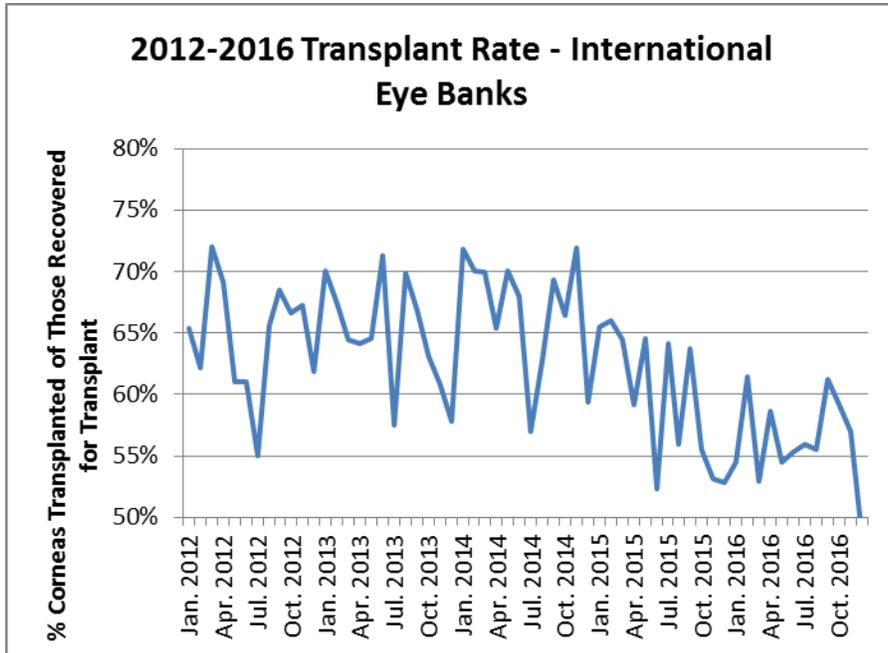
*Transplant rate is the number of corneas used for transplant divided by the number recovered for transplant.
Conversion rate is the number of transplant donors divided by the number of transplant eligible referrals.



2016 International Eye Banking Statistics Referral Trends, Transplant and Conversion Rates

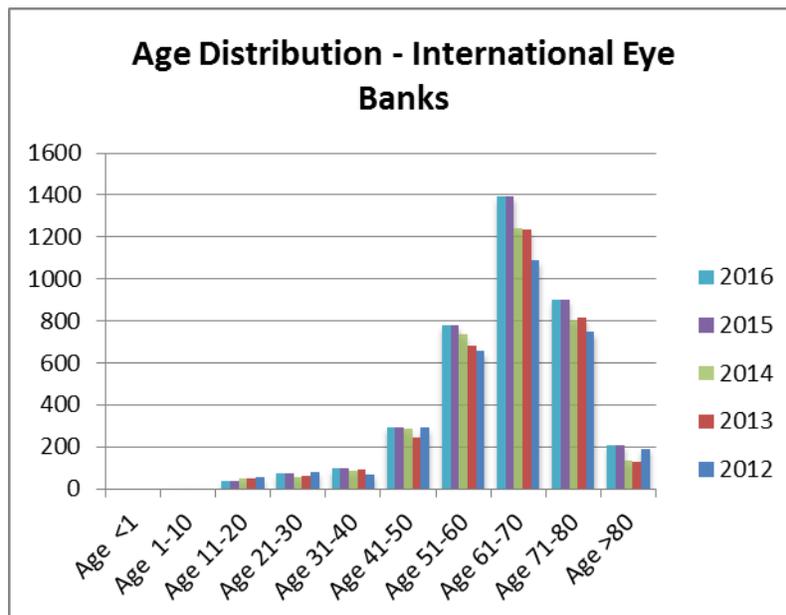


2016 International Eye Banking Statistics Transplant and Conversion Rates



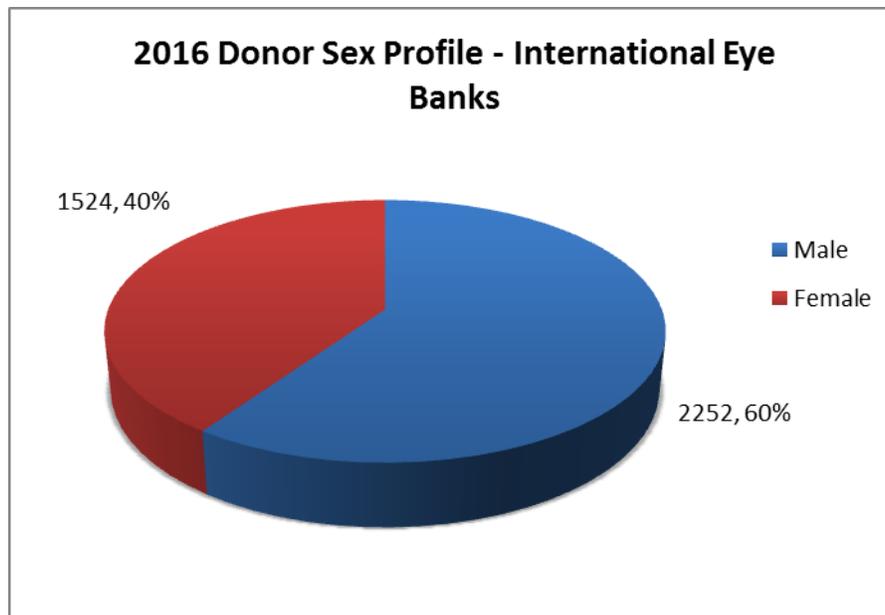
2016 International Eye Banking Statistics Donor Profiles: Age

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
2012 Total	0	9	54	78	69	289	654	1088	745	191
2013 Total	0	7	46	61	92	245	680	1235	814	125
2014 Total	0	11	50	55	83	284	736	1242	805	132
2015 Total	0	8	45	59	104	244	715	1372	784	135
2016 Total	0	7	35	71	94	291	778	1393	901	206
Monthly Avg.	0	1	3	6	8	24	65	116	75	17
Std. Dev.	0.0	1.0	1.5	2.0	3.3	3.9	11.3	12.5	6.6	6.9



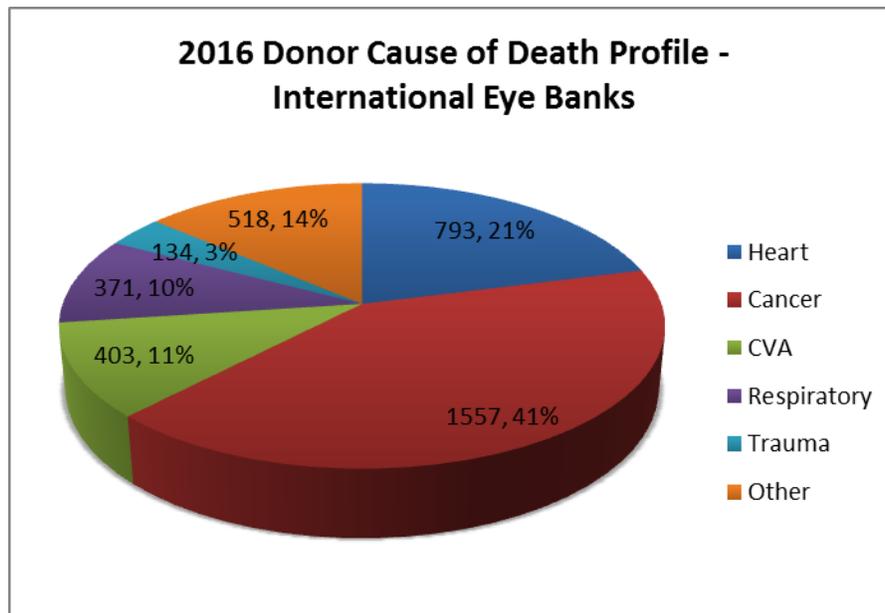
2016 International Eye Banking Statistics Donor Profiles: Gender and Cause of Death

International Eye Banks - Sex Profile		
Year	Male	Female
2012 Total	1870	1307
2013 Total	1924	1381
2014 Total	2009	1389
2015 Total	2058	1408
2016 Total	2252	1524
Monthly Avg.		
Monthly Avg.	188	127
Std. Dev.		
Std. Dev.	17.7	13.2



2016 International Eye Banking Statistics Donor Profiles: Cause of Death

International Eye Banks - Cause of Death Profile						
Year	Heart	Cancer	CVA	Respiratory	Trauma	Other
2012 Total	657	1191	318	320	180	511
2013 Total	662	1339	334	332	176	462
2014 Total	671	1453	327	338	154	455
2015 Total	681	1588	325	310	130	432
2016 Total	793	1557	403	371	134	518
Monthly Avg.	66	130	34	31	11	43
Std. Dev.	8.9	17.0	7.9	4.4	3.0	6.7



2016 International Eye Banking Statistics Reasons Tissue Intended for Surgery Was Not Suitable For Transplant

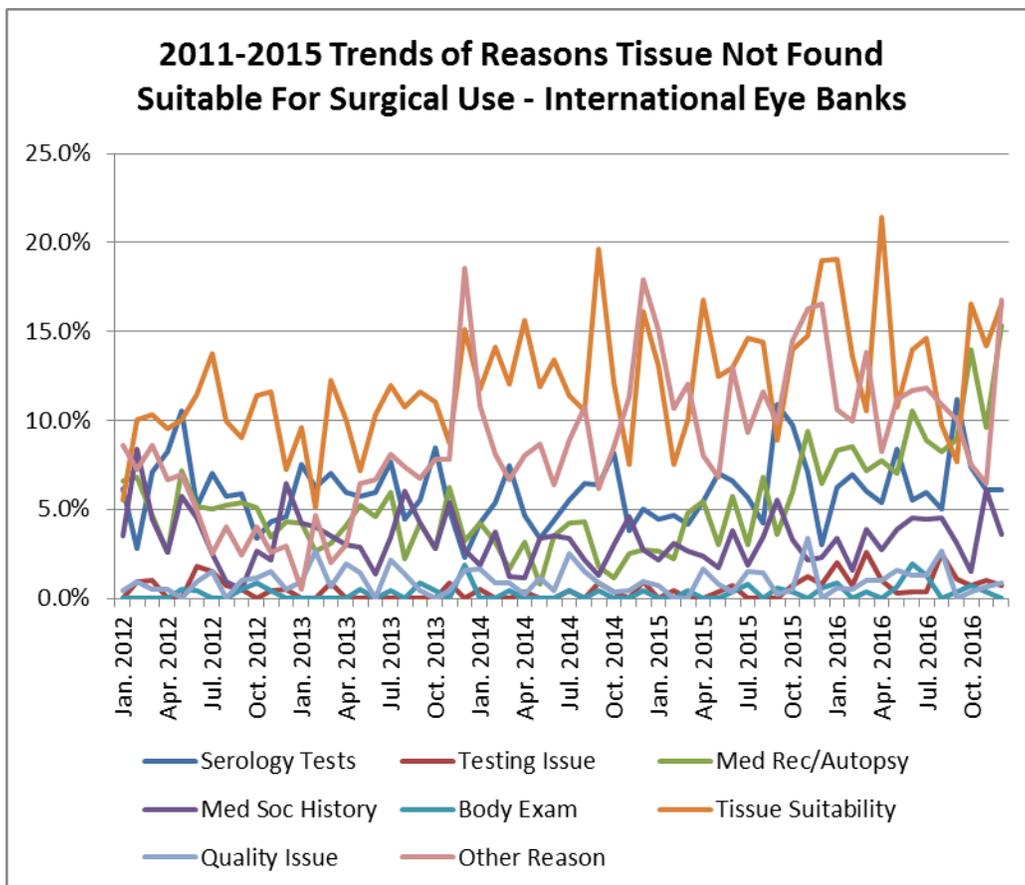
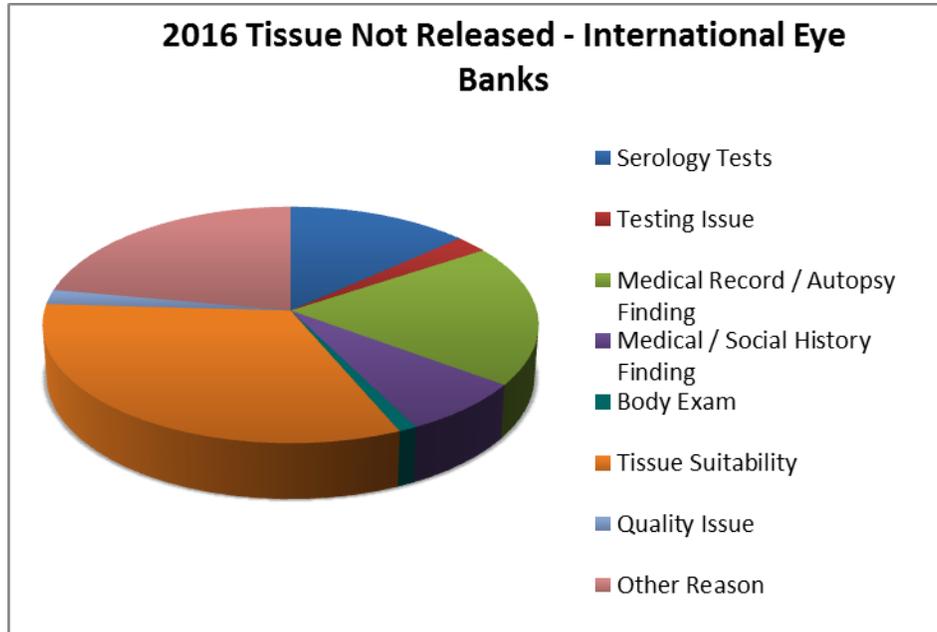
Contraindications for Transplant ¹	2016		2015	
Donor Eligibility	1,517	53.5%	939	42.4%
Positive or reactive test for communicable disease agent or disease	464	16.3%	394	17.8%
Other communicable disease testing issue	83	2.9%	24	1.1%
Medical record or autopsy findings	675	23.8%	323	14.6%
Medical/social history interview	258	9.1%	182	8.2%
Body Exam	37	1.3%	16	0.7%
Tissue Suitability	1,125	39.6%	856	38.6%
Quality Issue	70	2.5%	60	2.7%
Other reason prior to tissue release	770	27.1%	775	35.0%
Total eyes/corneas intended for transplant but not released for transplant	2,838		2,217	

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

Reasons Tissue Not Released	2012	2013	2014	2015	2016	Trends
Serology Tests	296	326	310	394	464	
Testing Issue	31	8	16	24	83	
Med. Rec./Autopsy Finding	260	219	155	323	675	
Med Soc Hx Finding	186	197	154	182	258	
Body Exam	12	18	8	16	37	
Tissue Suitability	506	561	743	856	1125	
Quality Issue	38	61	55	60	70	
Other Reason	260	360	531	775	770	

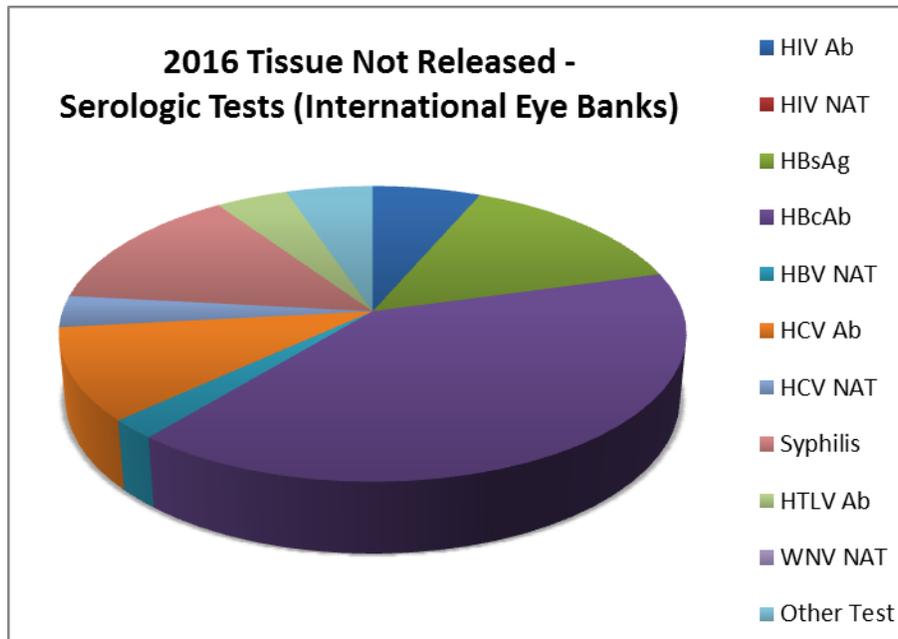
¹ Some tissues had multiple contraindications.

2016 International Eye Banking Statistics Reasons Tissue Intended for Surgery Was Not Released



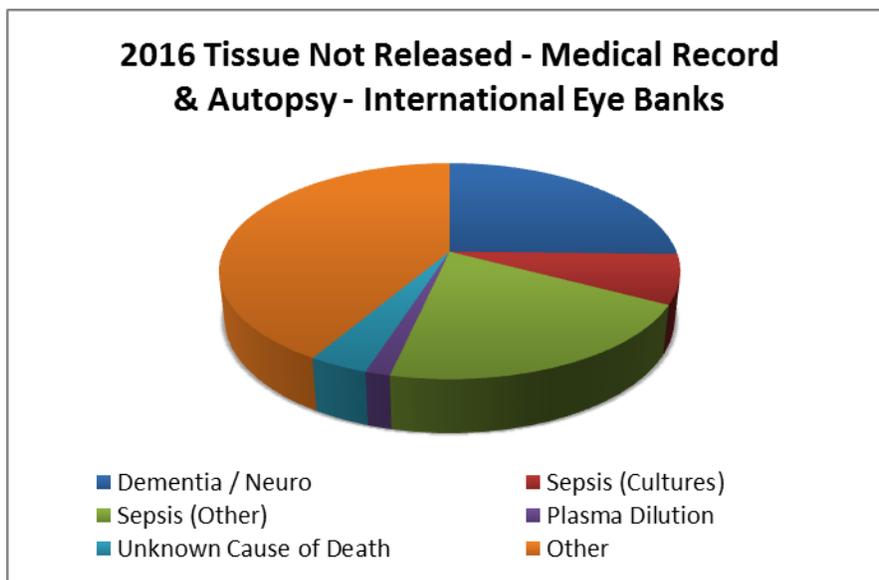
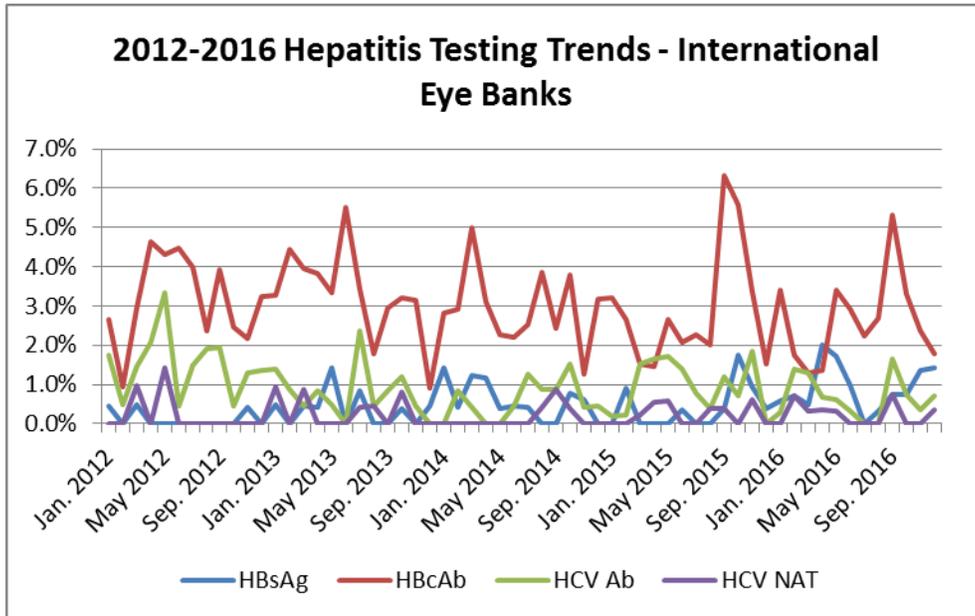
2016 International Eye Banking Statistics

Serologic Reasons Tissue Intended for Surgery Was Not Suitable For Transplant



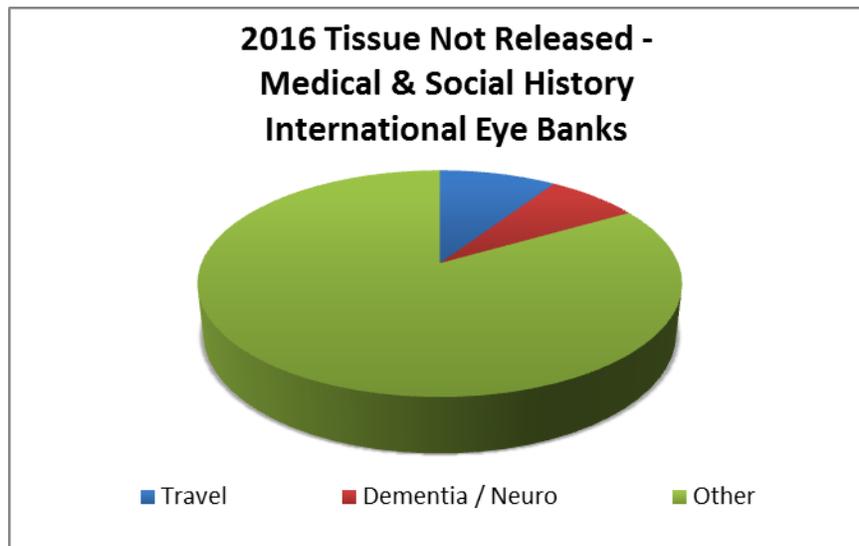
Not Released - Serology	2012	2013	2014	2015	2016	Trend
HIV	10	18	22	37	30	
HIV I/II Ab	8	6	20	37	30	
HIV NAT	2	12	2	0	0	
HBV	165	200	203	213	263	
HBsAg	6	20	33	26	66	
HBcAb	159	180	169	187	187	
HBV NAT	0	0	1	0	10	
HCV	85	59	42	78	63	
HCV Ab	75	43	34	63	47	
HCV NAT	10	16	8	15	16	
Syphilis	6	16	22	41	64	
HTLV	12	11	14	5	20	
WNV	0	0	4	0	0	
Other	18	22	3	20	24	

2016 International Eye Banking Statistics Reasons Tissue Intended for Surgery Was Not Suitable For Transplant



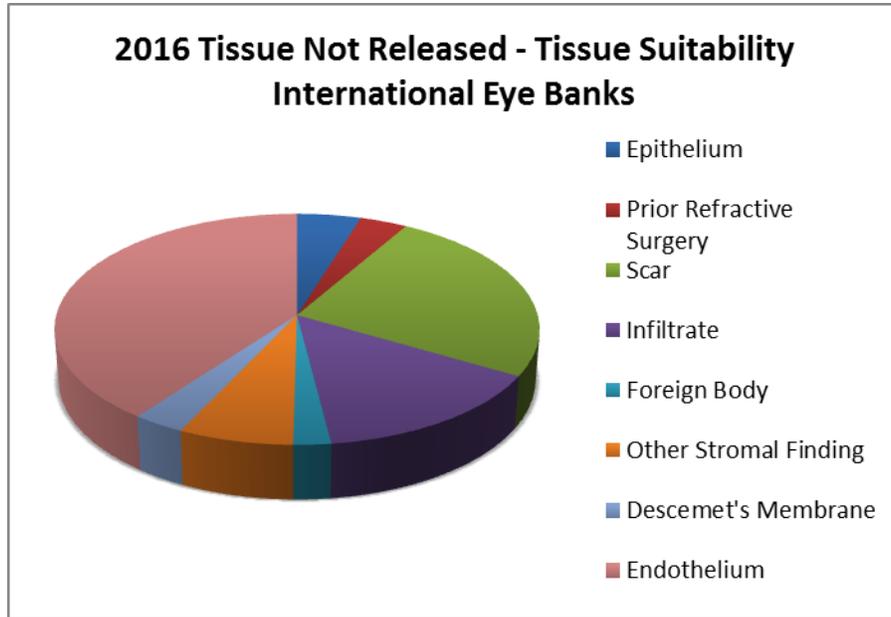
2016 International Eye Banking Statistics Reasons Tissue Intended for Surgery Was Not Suitable

Not Released - Med Rec / Autopsy	2012	2013	2014	2015	2016	Trends
Dementia/Neuro	16	20	20	48	171	
Sepsis (Cultures)	68	39	23	26	50	
Sepsis (Other)	79	80	50	111	140	
Plasma Dilution	10	6	6	4	10	
Unknown COD	35	26	22	28	24	
Other	52	48	34	106	280	



Not Released - Med Soc	2012	2013	2014	2015	2016	Trends
Travel	36	36	30	16	24	
Dementia/Neuro	2	24	30	40	19	
Other	136	137	94	126	215	

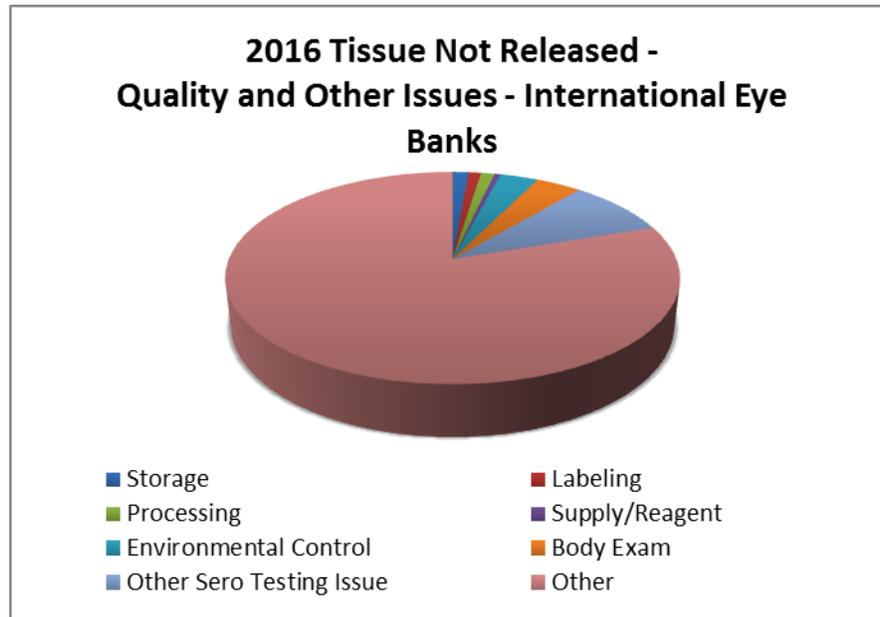
2016 International Eye Banking Statistics Tissue Suitability Reasons Tissue Was Not Released



Not Released - Tissue Suitability	2012	2013	2014	2015	2016	Trends
Epithelium	31	55	65	45	54	
Prior Refractive Surgery	4	9	33	33	40	
Scar	68	93	142	238	282	
Infiltrate	76	81	107	106	164	
Foreign Body	7	3	28	21	25	
Other Stromal Finding	59	40	34	77	77	
Descemet's Membrane	4	3	34	16	35	
Endothelium	257	277	300	320	448	

2016 International Eye Banking Statistics

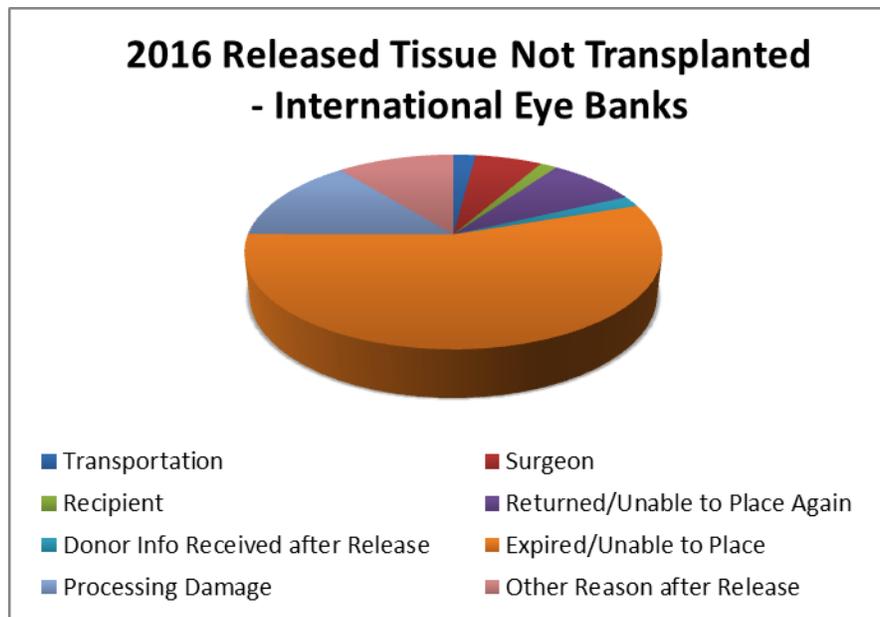
Quality Reasons Tissue Intended for Surgery Was Not Released



Not Released - Quality Issues / Other	2012	2013	2014	2015	2016	Trends
Storage Issue	13	22	16	23	13	
Labeling Issue	0	5	11	9	10	
Processing Issue (not released)	21	14	10	8	11	
Supply / Reagent Issue	2	14	8	5	5	
Environmental Control Issue	2	6	10	15	31	
Body Exam	12	18	8	16	37	
Other Sero Testing Issue	31	8	16	24	83	
Other Issue	260	360	531	775	770	

2016 International Eye Banking Statistics Reasons Released Tissues Were Not Transplanted

Reasons Released Tissues Were Not Transplanted	2016		2015	
Transportation Issue	8	2.1%	2	0.5%
Surgeon Issue	24	6.3%	53	13.9%
Recipient Issue	6	1.6%	6	1.6%
Returned and Unable to Place Again	32	8.4%	24	6.3%
Donor Information Not Available at the Time of Tissue Release	7	1.8%	2	0.5%
Expired or Unable to Place Tissue	215	56.7%	234	61.6%
Tissue Damaged During Processing	55	14.5%	41	10.8%
Other Reason After Release of Tissue	42	11.1%	24	6.3%
Total eyes/corneas released for transplant but not used for transplant	379		380	



Released But Not Transplanted	2012	2013	2014	2015	2016	Trends
Transport Issue	10	0	26	2	8	
Surgeon Issue	23	11	20	53	24	
Recipient Issue	5	3	5	6	6	
Returned, Unable to Place Again	55	53	56	24	32	
Donor Info Received After Release	0	0	0	2	7	
Expired, Unable to Place	246	198	316	234	215	
Processing Damage After Release	32	41	54	41	55	
Other Reason After Release	12	9	10	24	42	

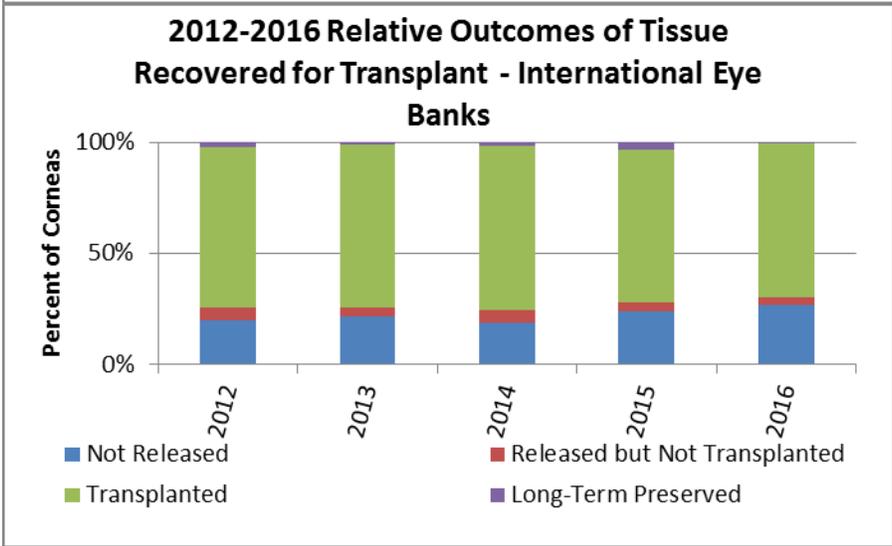
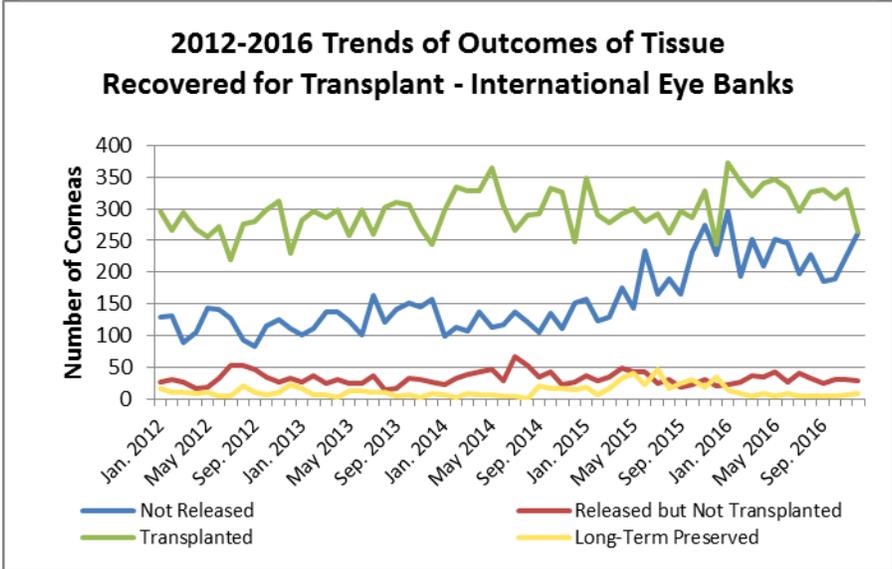
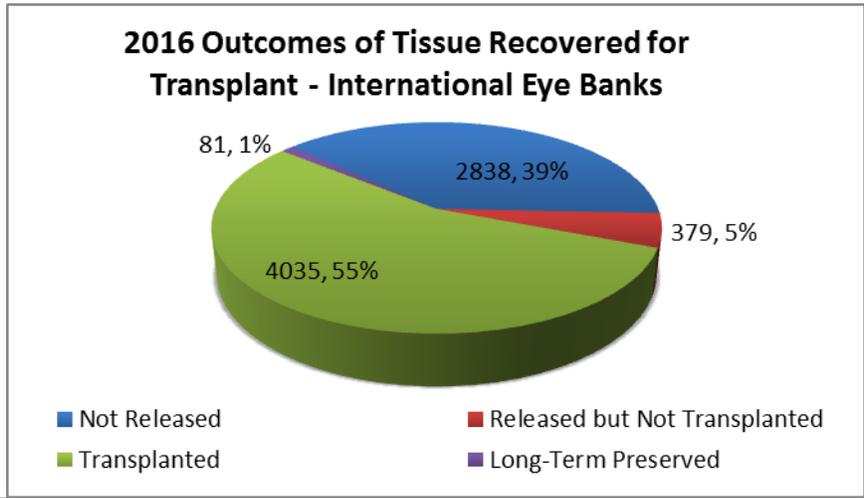
2016 International Eye Banking Statistics Outcomes of Tissue Recovered for Transplant

Donations	2016	2015	% Change
Eye Banks Reported	11	10	10.0%
Total Whole Eyes and Corneas Donated	7,520	6,846	9.8%
Total Number of Donors	3,776	3,466	8.9%
Distribution	2016	2015	% Change
Intermediate-Term Preserved Corneas	4,053	3,500	15.8%
Sclera	1,077	882	22.1%
Long-Term Preserved Corneas	92	108	(-14.8%)
Research	300	402	(-25.4%)
Training	1,663	1,547	7.5%

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. 2016	726	0	0	299	41.2%	24	3.3%	389	53.6%	14	1.9%
Feb. 2016	596	0	0	209	35.1%	26	4.4%	352	59.1%	9	1.5%
Mar. 2016	648	0	0	269	41.5%	38	5.9%	336	51.9%	5	0.8%
Apr. 2016	617	0	0	220	35.7%	35	5.7%	354	57.4%	8	1.3%
May 2016	656	0	0	262	39.9%	36	5.5%	354	54.0%	4	0.6%
Jun. 2016	646	0	0	262	40.6%	29	4.5%	347	53.7%	8	1.2%
Jul. 2016	562	0	0	203	36.1%	45	8.0%	309	55.0%	5	0.9%
Aug. 2016	648	0	0	249	38.4%	35	5.4%	360	55.6%	4	0.6%
Sep. 2016	557	0	0	192	34.5%	27	4.8%	333	59.8%	5	0.9%
Oct. 2016	540	0	0	189	35.0%	28	5.2%	318	58.9%	5	0.9%
Nov. 2016	584	0	0	228	39.0%	28	4.8%	322	55.1%	6	1.0%
Dec. 2016	553	0	0	256	46.3%	28	5.1%	261	47.2%	8	1.4%
2012 Total	5058	0	0	1394	27.6%	394	7.8%	3270	64.7%	137	2.7%
2013 Total	5427	0	0	1588	29.3%	324	6.0%	3415	62.9%	100	1.8%
2014 Total	5726	6	10	1443	25.2%	459	8.0%	3718	64.9%	110	1.9%
2015 Total	6403	29	30	2217	34.6%	380	5.9%	3500	54.7%	307	4.8%
2016 Total	7333	0	0	2838	38.7%	379	5.2%	4035	55.0%	81	1.1%
2016 Avg.	611	0	0	237	N/A	32	N/A	336	N/A	7	N/A
Std. Dev.	56	0.00	0.0	35	3.5%	6	1.1%	32	3.5%	3	0.4%

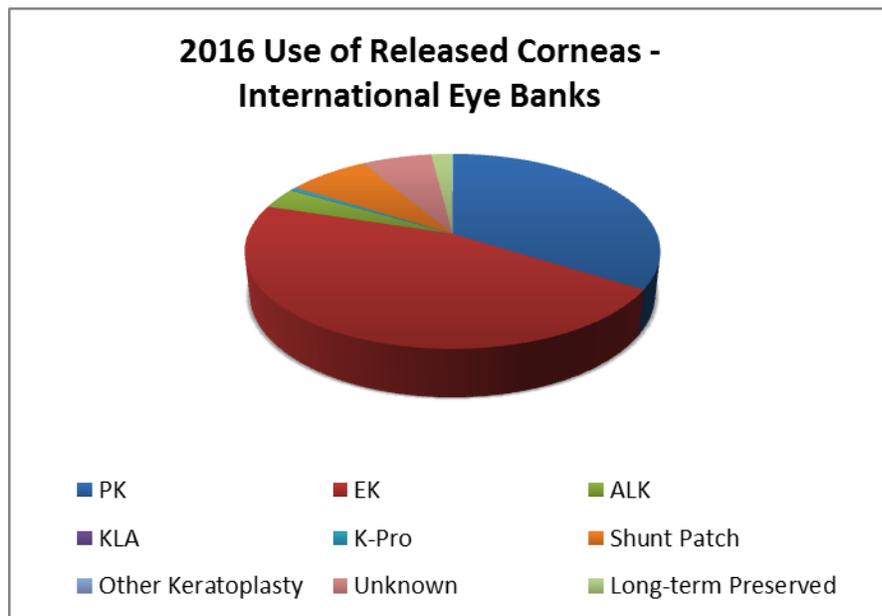
*Percentages read from this table should be read as "of the tissue recovered with transplant intent"

2016 International Eye Banking Statistics Outcomes of Tissues Recovered For Transplant



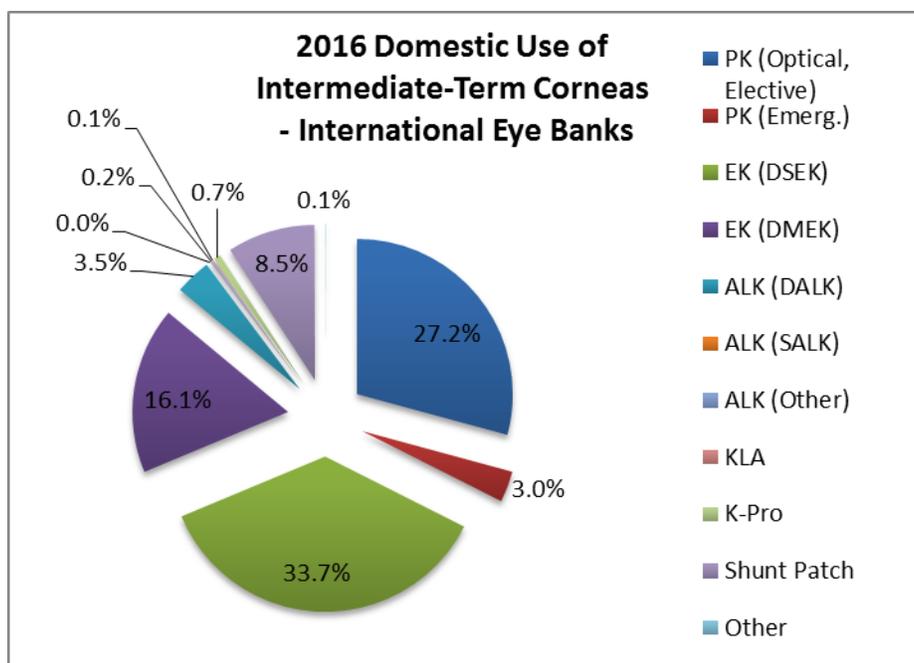
2016 International Eye Banking Statistics Use of Donated Tissues

Distribution	2016	2015	2014	2013	2012
Corneal Grafts Total	4,116	3,806	3,824	3,515	3,270
Penetrating Keratoplasty	1,399	1,403	1,539	1,356	1,246
Anterior Lamellar Keratoplasty	142	192	150	160	122
Endothelial Keratoplasty	1,890	1,523	1,669	1,491	1,271
Keratolimbal Allograft	4	8	0	0	0
Keratoprosthesis (K-Pro)	24	15	20	14	18
Glaucoma Shunt Patch or other non-keratoplasty use	313	240	304	227	169
Other keratoplasty (experimental surgery)	3	1	0	0	1
Unknown or Unspecified	260	118	36	167	306
Sclera	1,077	882	1,010	943	996
Long-Term Preserved Corneas	92	108	113	112	141
Keratoplasty	2	5	12	1	11
Glaucoma Shunt Patching	89	102	101	110	119
Other Surgical Uses	1	1	0	1	11
Research	300	402	291	305	248
Training	1663	1,547	1,301	1,462	1,445



2016 International Eye Banking Statistics Intermediate-Term Tissue Distribution

Intermediate-Term Tissue Distribution of Source Eye Bank Corneas For Domestic Use		
	2016	2015
Intermediate-term preserved corneas, corneal segments or whole eyes transplanted domestically for:	3,672	3,084
PK	1,107	1,101
Optical or Elective PK	997	1,013
Emergency or Full Thickness	110	88
EK	1,829	1,478
DSEK, DSAEK, DLEK	1,237	1,097
DMEK or DMAEK	592	381
ALK	135	185
DALK (Deep Anterior Lamellar Keratoplasty)	128	183
SALK (Superficial Anterior Lamellar Keratoplasty)	1	0
Other ALK (e.g. peripheral, eccentric, etc.)	6	2
KLA	4	8
Keratoprosthesis (K-Pro)	24	15
Glaucoma shunt patch or other non-keratoplasty use	311	239
Other Keratoplasty (e.g. experimental surgery type)	2	1
Unknown or Unspecified	260	57
Total intermediate-term preserved corneas, corneal segments, and whole eyes used for KERATOPLASTY	3,722	3,260
Total intermediate-term preserved corneas, corneal segments, and whole eyes used for TRANSPLANT	4,053	3,499



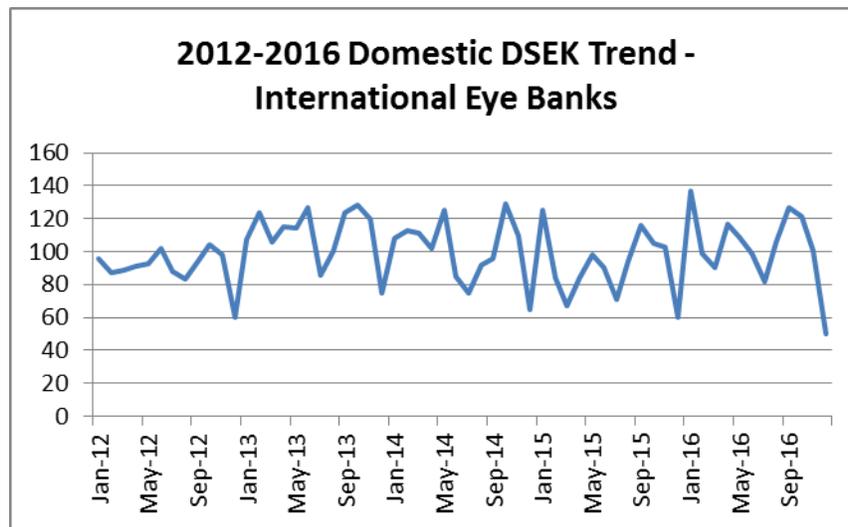
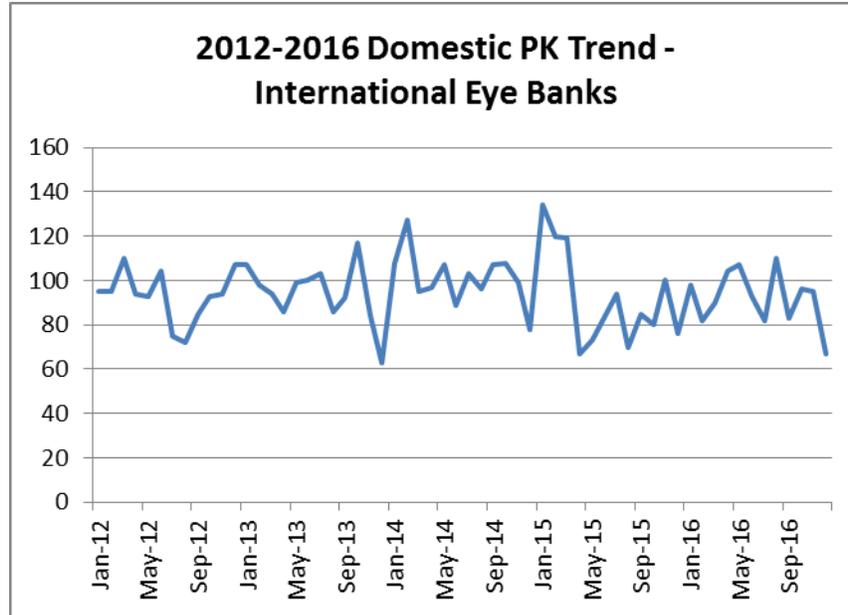
2016 International Eye Banking Statistics

Domestic Surgery Use of Intermediate-Term Preserved Tissue

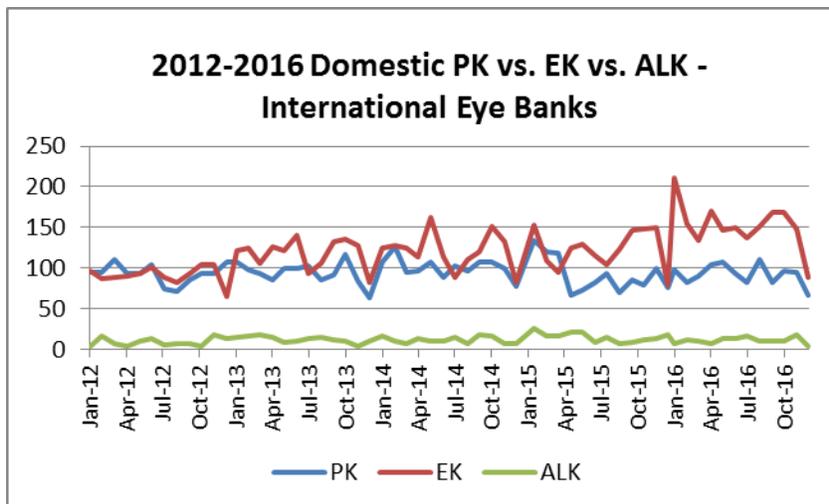
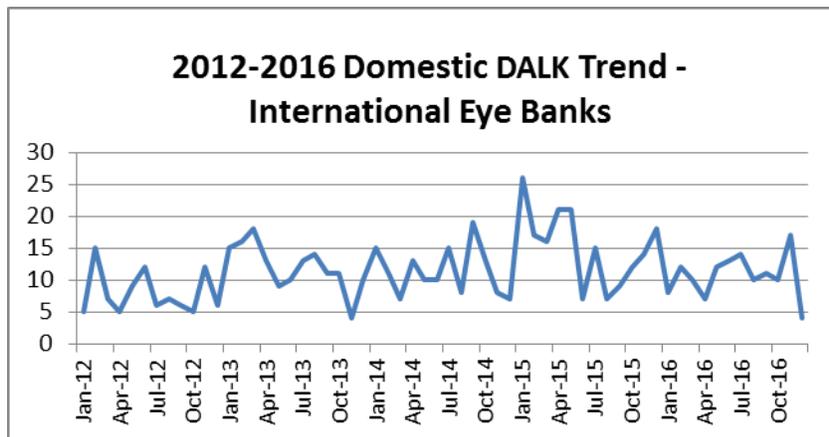
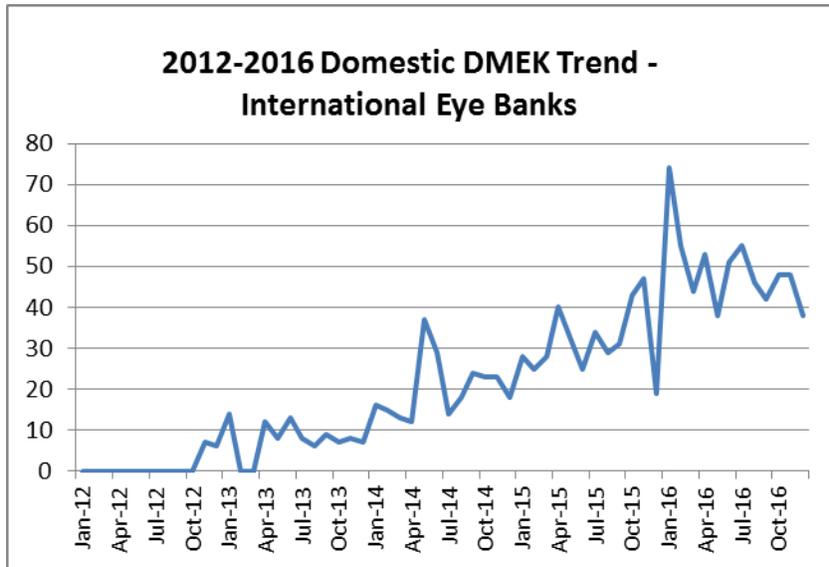
International Eye Banks												
Month	PK (Optical, Elective)	PK (Emerg.)	EK (DSEK)	EK (DMEK)	ALK (DALK)	ALK (SALK)	ALK (Other)	KLA	K- Pro	Shunt Patch	Other	Unknown
Jan. 2016	25.8%	1.1%	37.6%	20.3%	2.2%	0.0%	0.0%	0.5%	0.3%	7.4%	0.3%	4.4%
Feb. 2016	24.1%	1.6%	30.9%	17.2%	3.8%	0.0%	0.0%	0.0%	0.3%	13.8%	0.0%	8.4%
Mar. 2016	29.4%	2.1%	31.5%	15.4%	3.5%	0.0%	0.3%	0.0%	0.3%	11.2%	0.0%	6.3%
Apr. 2016	27.4%	3.2%	34.4%	15.6%	2.1%	0.0%	0.3%	0.0%	0.9%	10.3%	0.0%	5.9%
May 2016	28.3%	5.0%	33.9%	11.8%	3.7%	0.0%	0.3%	0.0%	0.9%	5.9%	0.3%	9.9%
Jun. 2016	26.4%	3.5%	31.8%	16.4%	4.2%	0.0%	0.0%	0.0%	1.0%	10.3%	0.0%	6.4%
Jul. 2016	25.9%	4.4%	30.4%	20.4%	5.2%	0.0%	0.7%	0.4%	1.1%	4.8%	0.0%	6.7%
Aug. 2016	30.5%	3.7%	33.0%	14.3%	3.1%	0.0%	0.0%	0.0%	0.9%	6.9%	0.0%	7.5%
Sep. 2016	23.5%	2.9%	40.3%	13.3%	3.5%	0.0%	0.0%	0.0%	0.3%	8.6%	0.0%	7.6%
Oct. 2016	27.7%	2.9%	38.5%	15.3%	3.2%	0.0%	0.0%	0.0%	0.3%	7.6%	0.0%	4.5%
Nov. 2016	29.1%	2.7%	33.4%	16.1%	5.7%	0.0%	0.3%	0.0%	0.7%	8.4%	0.0%	3.7%
Dec. 2016	28.6%	3.3%	23.8%	18.1%	1.9%	0.5%	0.0%	0.5%	1.0%	5.2%	0.0%	17.1%
2012 Avg.	20.7%	0.2%	21.1%	0.0%	1.1%	0.0%	0.0%	0.0%	1.3%	2.0%	0.0%	8.8%
2013 Avg.	35.3%	1.4%	43.1%	3.0%	4.7%	0.1%	0.1%	0.0%	0.4%	7.4%	0.0%	4.7%
2014 Avg.	36.5%	1.9%	38.2%	7.6%	4.3%	0.0%	0.2%	0.0%	0.6%	9.6%	0.0%	1.1%
2015 Avg.	32.8%	2.9%	35.6%	12.4%	5.9%	0.0%	0.1%	0.3%	0.5%	7.7%	0.0%	1.8%
2016 Avg.	27.2%	3.0%	33.7%	16.1%	3.5%	0.0%	0.2%	0.1%	0.7%	8.5%	0.1%	7.1%
Std. Dev.	2.1%	1.1%	4.3%	2.6%	1.2%	0.1%	0.2%	0.2%	0.3%	2.6%	0.1%	3.6%

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

2016 International Eye Banking Statistics Trends of Domestic Use



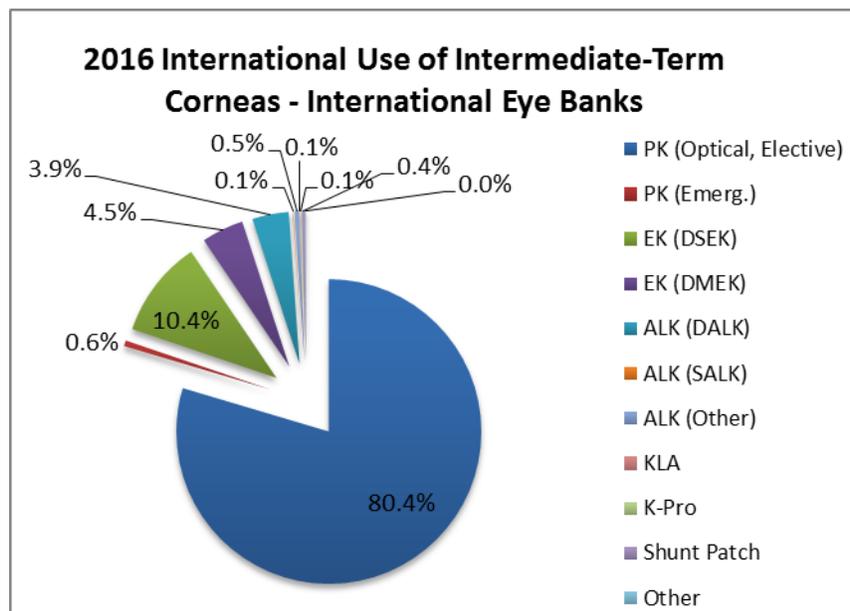
2016 International Eye Banking Statistics Trends of Domestic Use



2016 International Eye Banking Statistics

International Surgery Use of Intermediate-Term Preserved Tissue

Intermediate-Term Tissue Distribution of Source Eye Bank Corneas For International Use		
	2016	2015
Intermediate-term preserved corneas, corneal segments or whole eyes transplanted for:	363	416
PK	292	302
Optical or Elective PK	292	298
Emergency or Full Thickness	0	4
EK	61	45
DSEK, DSAEK, DLEK	29	23
DMEK or DMAEK	32	22
ALK	7	7
DALK (Deep Anterior Lamellar Keratoplasty)	7	7
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	1
Other Keratoplasty (e.g. experimental surgery type)	1	0
Unknown or Unspecified	0	61
Total intermediate-term preserved corneas, corneal segments, and whole eyes used for KERATOPLASTY	3,722	3,260
Total intermediate-term preserved corneas, corneal segments, and whole eyes used for TRANSPLANT	4,053	3,499



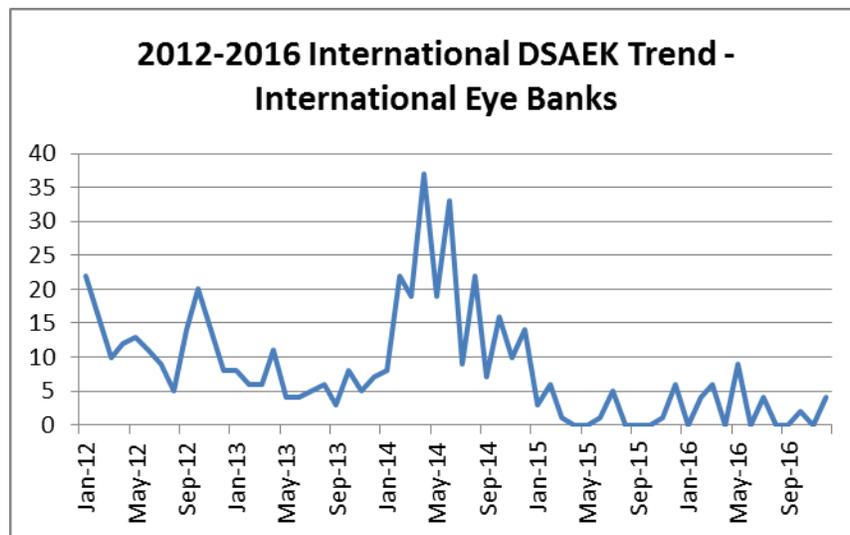
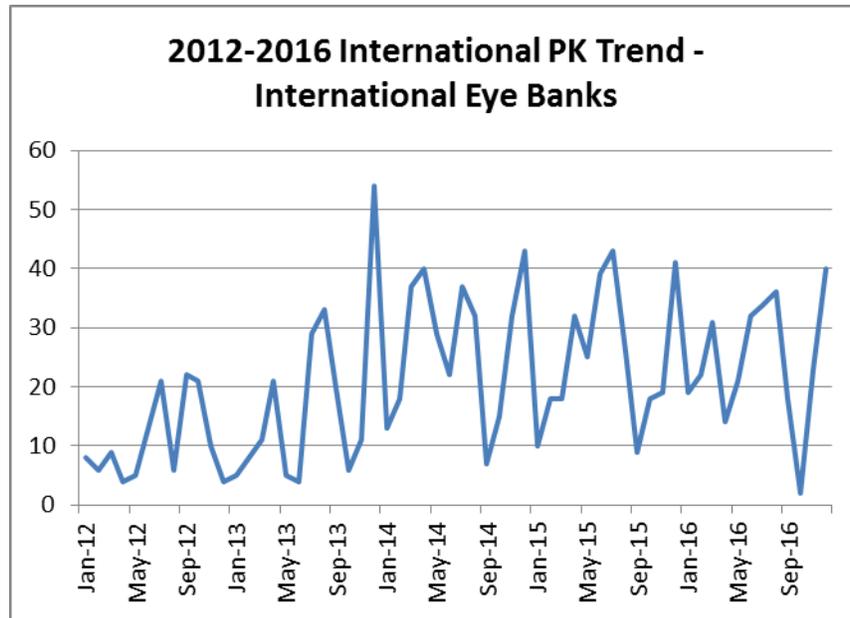
2016 International Eye Banking Statistics

International Surgery Use of Intermediate-Term Preserved Tissue

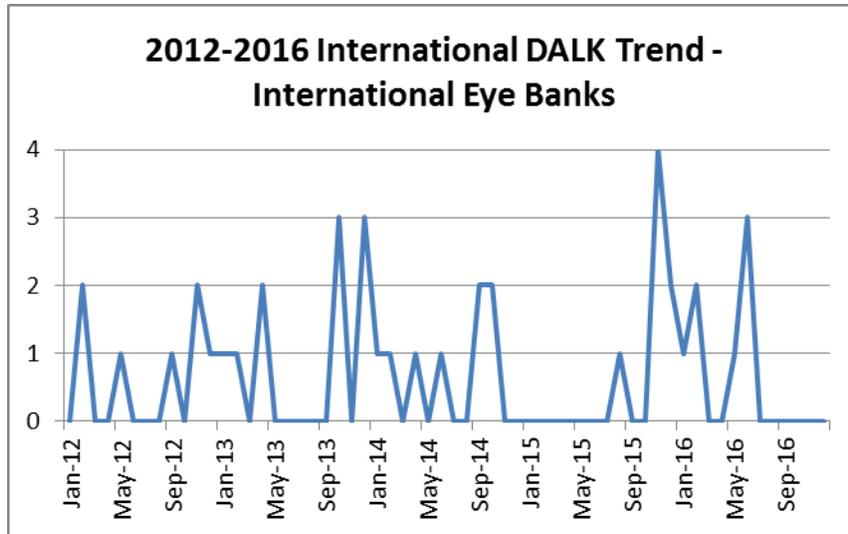
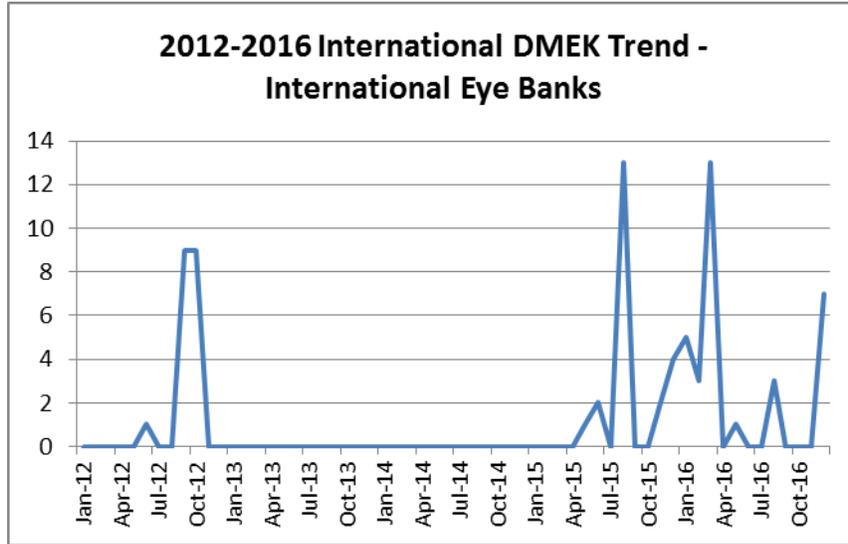
International Eye Banks												
Month	PK (Optical, Elective)	PK (Emerg.)	EK (DSEK)	EK (DMEK)	ALK (DALK)	ALK (SALK)	ALK (Other)	KLA	K- Pro	Shunt Patch	Other	Unknown
Jan. 2016	76.0%	0.0%	0.0%	20.0%	4.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Feb. 2016	68.8%	0.0%	12.5%	9.4%	6.3%	0.0%	0.0%	0.0%	0.0%	3.1%	0.0%	0.0%
Mar. 2016	62.0%	0.0%	12.0%	26.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Apr. 2016	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May 2016	65.6%	0.0%	28.1%	3.1%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Jun. 2016	88.9%	0.0%	0.0%	0.0%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	0.0%
Jul. 2016	87.2%	0.0%	10.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%
Aug. 2016	92.3%	0.0%	0.0%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sep. 2016	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Oct. 2016	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nov. 2016	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dec. 2016	78.4%	0.0%	7.8%	13.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2012 Avg.	41.2%	0.0%	49.2%	6.1%	2.2%	0.0%	0.0%	0.0%	0.6%	0.3%	0.3%	0.0%
2013 Avg.	61.6%	1.0%	11.2%	0.3%	4.0%	0.2%	1.0%	0.1%	0.2%	0.1%	0.1%	3.5%
2014 Avg.	59.0%	0.7%	10.8%	1.5%	3.4%	0.0%	0.8%	0.0%	0.1%	0.2%	0.0%	3.0%
2015 Avg.	71.6%	1.0%	10.8%	2.8%	3.7%	0.1%	0.4%	0.0%	0.2%	0.3%	0.0%	2.8%
2016 Avg.	80.4%	0.6%	10.4%	4.5%	3.9%	0.1%	0.5%	0.1%	0.1%	0.4%	0.0%	3.9%
Std. Dev.	16.7%	0.0%	15.2%	9.0%	2.9%	0.0%	0.0%	0.0%	0.0%	1.1%	0.8%	0.0%

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

2016 International Eye Banking Statistics Trends of International Use

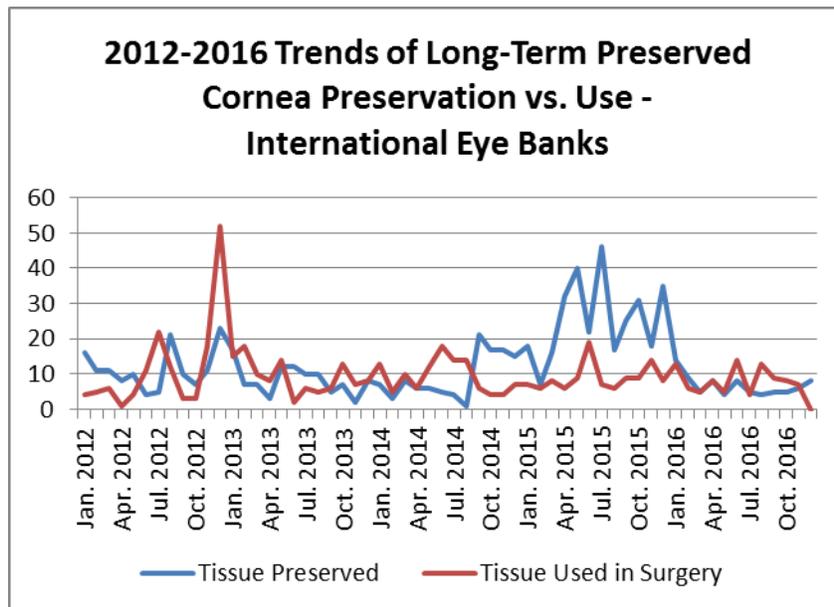


2016 International Eye Banking Statistics Trends of International Use



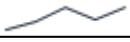
2016 International Eye Banking Statistics Long-Term Tissue Distribution

Long-Term Preserved Tissue Preservation and Distribution		
	2016	2015
Long-term preserved corneas or whole globes PRESERVED for transplant	81	307
Long-term preserved corneas, corneal segments, or whole globes DISTRIBUTED for:	92	108
Keratoplasty	2	5
Glaucoma Shunt patching	89	102
Other Surgical Uses	1	1
Long-term preserved corneas, corneal segments, or whole globes FORWARDED to another entity for final distribution	0	59
Sclera or sclera segments PRESERVED for transplantation	1,398	1,269
Sclera or sclera segments DISTRIBUTED for:	1,077	882
Prosthesis following enucleation	39	18
Glaucoma shunt patching	773	611
Other surgical uses	265	253
Sclera or sclera segments FORWARDED to another entity for final distribution	24	2

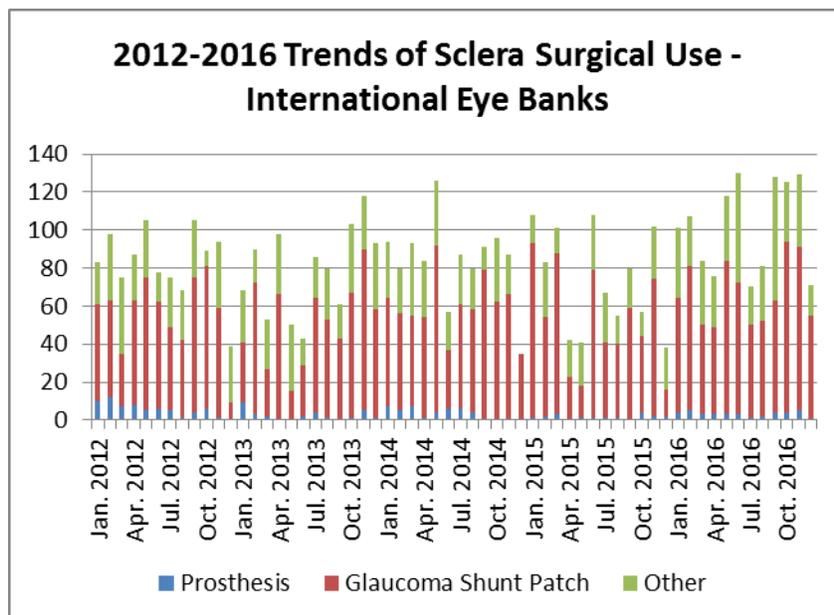
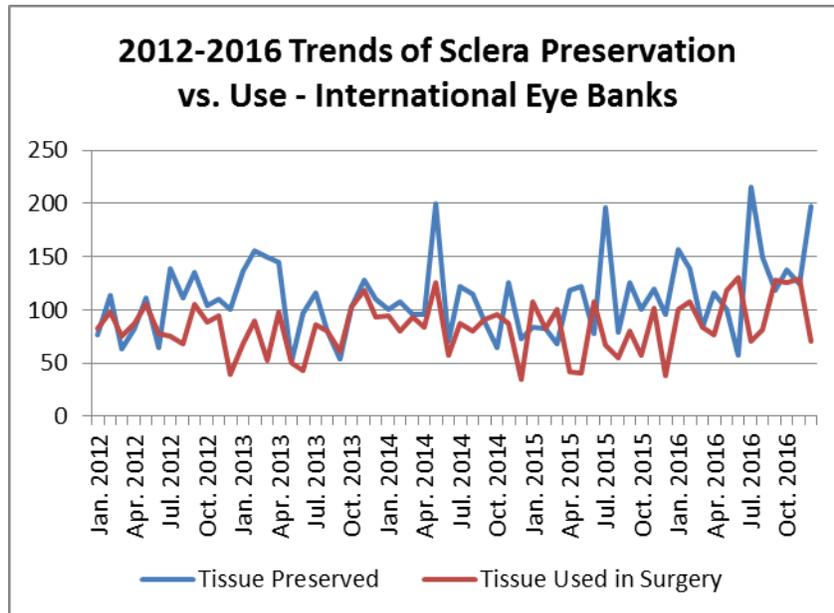


2016 International Eye Banking Statistics Long-Term Tissue Trends

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. 2016	14	0	13	0	139	4	60	24
Feb. 2016	9	0	6	0	129	5	76	16
Mar. 2016	5	0	5	0	68	3	47	22
Apr. 2016	8	2	6	0	82	3	46	17
May 2016	4	0	5	0	100	3	81	26
Jun. 2016	8	0	14	0	57	3	69	33
Jul. 2016	5	0	4	0	151	1	49	14
Aug. 2016	4	0	13	0	117	2	50	17
Sep. 2016	5	0	8	1	116	4	59	38
Oct. 2016	5	0	8	0	130	6	95	25
Nov. 2016	6	0	7	0	117	5	86	24
Dec. 2016	8	0	0	0	192	0	55	9
2012 Total	137	11	119	11	1210	65	609	322
2013 Total	100	1	110	1	1325	28	597	318
2014 Total	110	12	101	0	1261	40	679	291
2015 Total	307	5	102	1	1269	18	611	253
2016 Total	81	2	89	1	1398	39	773	265
2016 Avg.	7	0	7	0	117	3	64	22
Std. Dev.	3	1	4	0	37	2	17	8

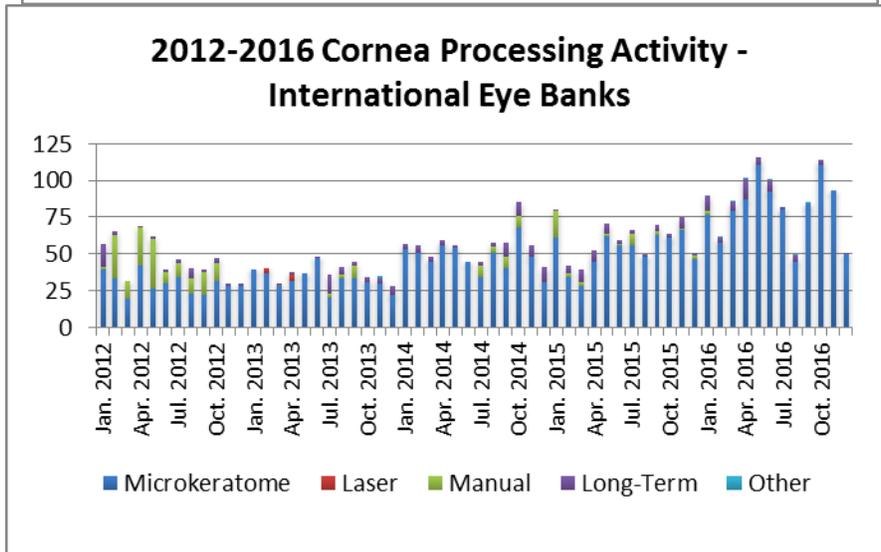
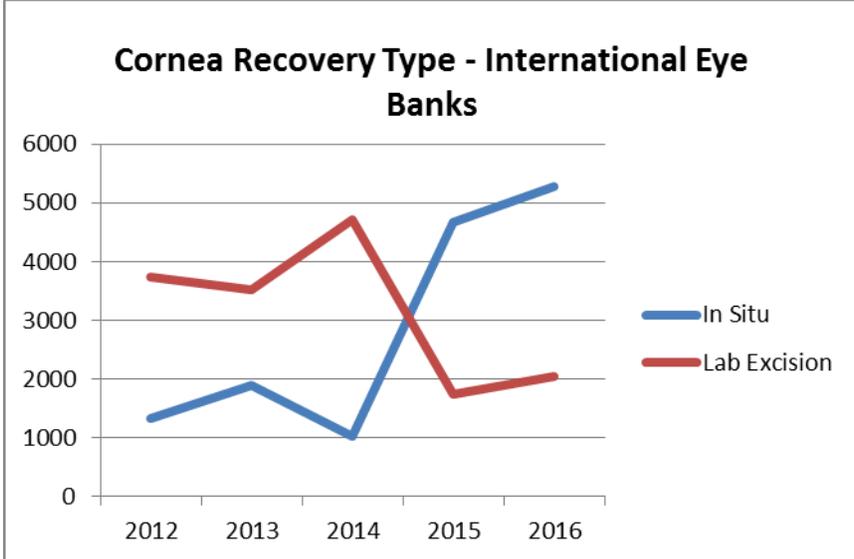
Ocular Tissue Used for Glaucoma Shunt Patching	2012	2013	2014	2015	2016	Trends
Long-Term Cornea	119	110	101	102	89	
Intermediate-Term Cornea	169	227	304	240	313	
Sclera	609	597	679	611	773	

2016 International Eye Banking Statistics Long-Term Tissue Trends



2016 International Eye Banking Statistics Tissue Processing

Tissue Processing for Transplant		
	2016	2015
Eye Processing (does not include in situ excision)	2,050	1,736
Processed for corneal preservation only	1,516	1,339
Processed for sclera preservation	494	319
Processed for other ocular materials	40	78
Cornea Processing	929	719
Processed by microkeratome	864	626
Processed by laser	0	0
Processed by hand dissection	2	41
Processed by transfer into long-term preservation	57	52
Processed by other methods	6	0

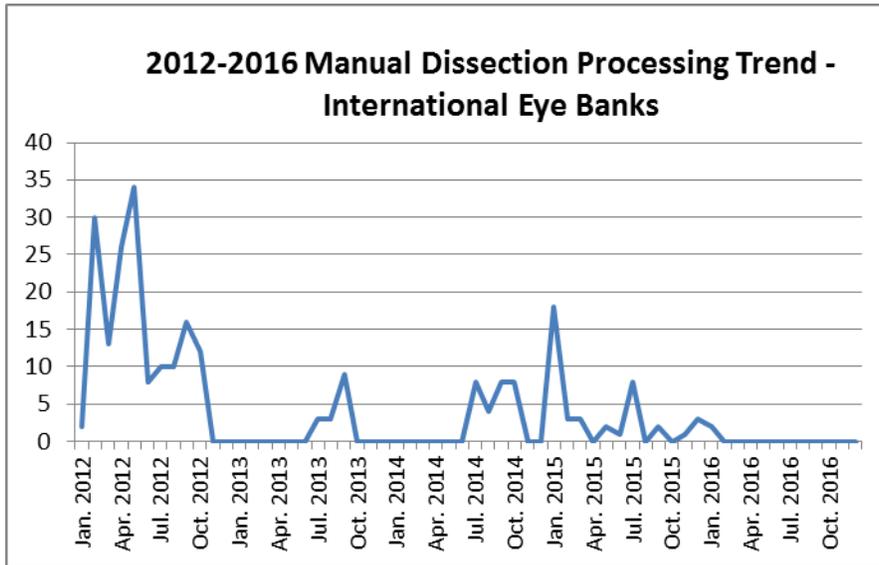
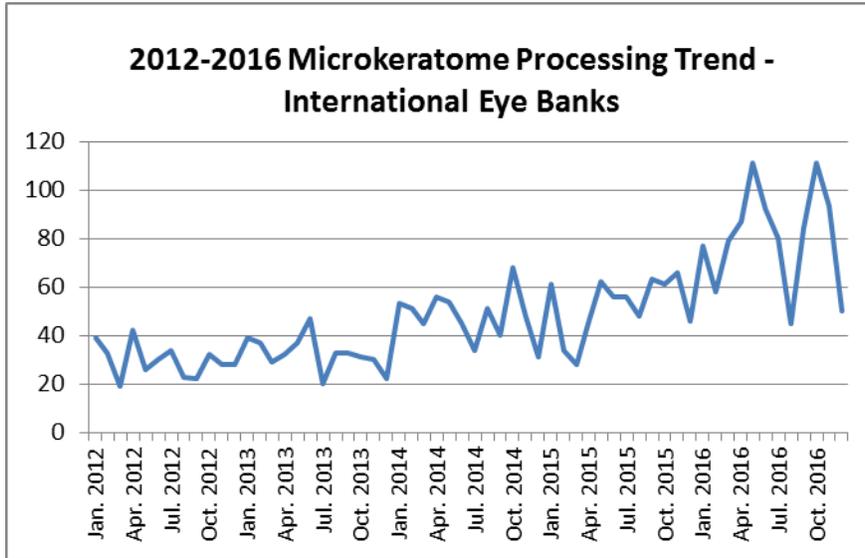


2016 International Eye Banking Statistics Tissue Processing

Month	Processing - Microkeratome	Processing - Laser	Processing - Manual	Processing - Long-Term Preservation	Processing - Other
Jan. 2016	72	0	2	11	0
Feb. 2016	51	0	0	3	1
Mar. 2016	70	0	0	6	1
Apr. 2016	78	0	0	14	1
May 2016	96	0	0	5	0
Jun. 2016	80	0	0	8	1
Jul. 2016	63	0	0	2	0
Aug. 2016	42	0	0	4	1
Sep. 2016	80	0	0	0	1
Oct. 2016	100	0	0	3	0
Nov. 2016	85	0	0	0	0
Dec. 2016	47	0	0	1	0
2012 Total	356	0	161	39	0
2013 Total	390	8	15	36	2
2014 Total	576	0	28	60	0
2015 Total	626	0	41	52	0
2016 Total	864	0	2	57	6
2016 Avg.	72	0	0	5	1
Std. Dev.	18	0	1	4	1

	2012	2013	2014	2015	2016	Trends
Processing Events	556	451	664	719	929	
Failed Processing	53	55	64	49	66	
Failure Rate	9.5%	12.2%	9.6%	6.8%	7.1%	
	2012	2013	2014	2015	2016	Trends
In Situ	1327	1897	1024	4667	5283	
Lab Excision	3731	3530	4702	1736	2050	

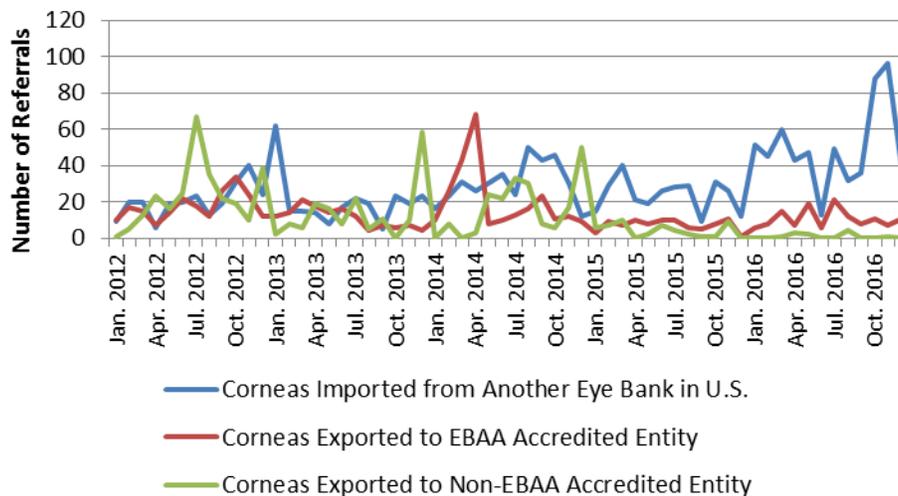
2016 International Eye Banking Statistics Tissue Processing



2016 International Eye Banking Statistics Forwarded Tissue

Month	Imported Tissue	Exported Tissue (to EBAA Accred.)	Exported Tissue (to non-EBAA Accred.)
Jan. 2016	85	6	0
Feb. 2016	96	8	0
Mar. 2016	92	15	1
Apr. 2016	93	7	3
May 2016	57	19	2
Jun. 2016	56	6	0
Jul. 2016	54	21	0
Aug. 2016	62	12	4
Sep. 2016	81	8	0
Oct. 2016	132	11	0
Nov. 2016	128	7	1
Dec. 2016	73	11	0
2012 Total	244	211	275
2013 Total	242	135	165
2014 Total	366	249	201
2015 Total	285	88	49
2016 Total	1009	131	11
2016 Avg.	84	11	1
Std. Dev.	26	5	1

**2012-2016 Importing and Exporting Trends -
International Eye Banks**



2016 International Eye Banking Statistics Indications for Corneal Transplant

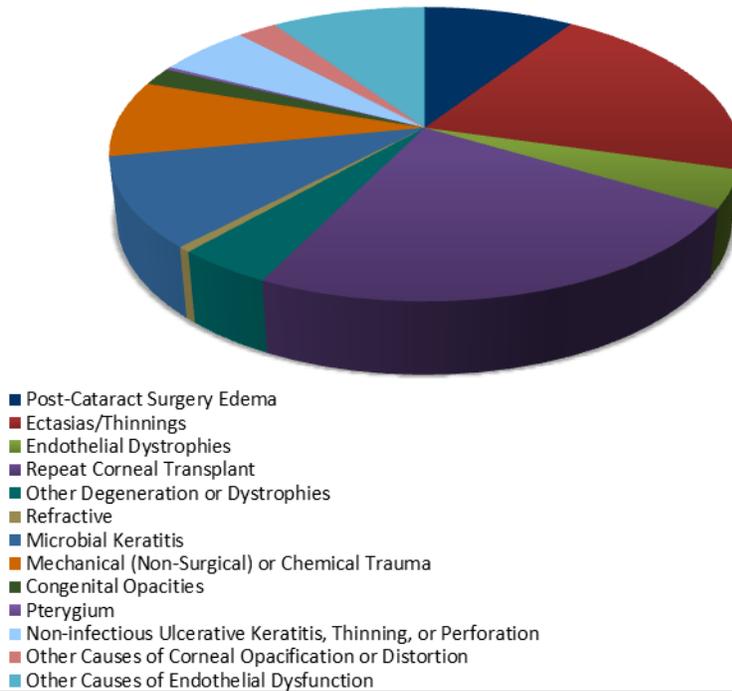
Indications for Penetrating Keratoplasty	2016		2015	
A. Post-cataract surgery edema	111	7.9%	152	10.8%
B. Keratoconus	247	17.7%	279	19.9%
C. Fuchs' Dystrophy	50	3.6%	61	4.3%
D. Repeat Corneal Transplant	286	20.4%	245	17.5%
E. Other degenerations or dystrophies	51	3.6%	33	2.4%
F. Post-refractive surgery	7	0.5%	2	0.1%
G. Microbial changes	120	8.6%	128	9.1%
H. Mechanical or chemical trauma	102	7.3%	80	5.7%
I. Congenital opacities	24	1.7%	24	1.7%
J. Pterygium	4	0.3%	0	0.0%
K. Non-infectious ulcerative keratitis or perforation	68	4.9%	55	3.9%
L. Other causes of corneal dysfunction or distortion (non-endothelial)	29	2.1%	50	3.6%
M. Other causes of endothelial dysfunction	114	8.1%	101	7.2%
Z. Unknown, unreported, or unspecified	186	12.0%	193	13.8%
Total Indications for Penetrating Keratoplasty	1,399		1,403	

Indications for Anterior Lamellar Keratoplasty	2016		2015	
B. Keratoconus	86	60.6%	109	56.8%
D. Repeat Corneal Transplant	5	3.5%	6	3.1%
E. Other degenerations or dystrophies	7	4.9%	6	3.1%
F. Post-refractive surgery	4	2.8%	1	0.5%
G. Microbial changes	14	9.9%	17	8.9%
H. Mechanical or chemical trauma	9	6.3%	10	5.2%
I. Congenital opacities	4	2.8%	6	3.1%
J. Pterygium	0	0.0%	0	0.0%
K. Non-infectious ulcerative keratitis or perforation	3	2.1%	3	1.6%
L. Other causes of corneal dysfunction or distortion	4	2.8%	3	1.6%
Z. Unknown, unreported, or unspecified	6	4.2%	31	16.1%
Total for Anterior Keratoplasty	142		192	

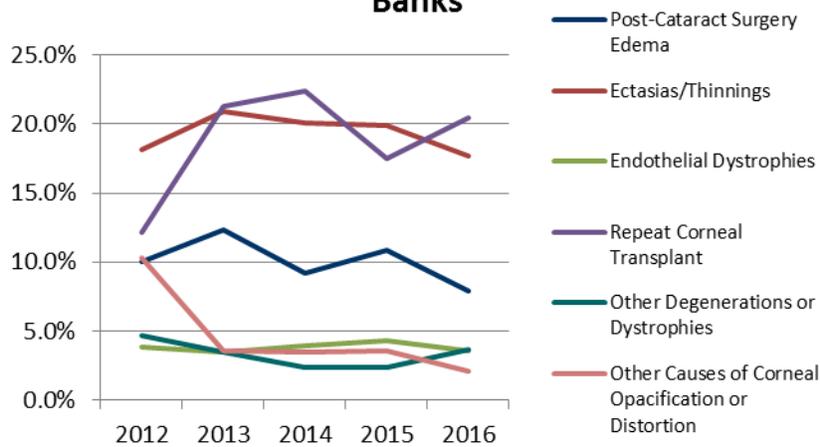
Indications for Endothelial Keratoplasty	2016		2015	
A. Post-Cataract Surgery Edema	460	24.3%	400	26.3%
C. Fuchs' Dystrophy	868	45.9%	774	50.8%
D. Repeat Corneal Transplant	250	13.2%	199	13.1%
M. Other Causes of Endothelial Dysfunction	191	10.1%	80	5.3%
Z. Unknown, unreported, or unspecified	121	6.4%	70	4.6%
Total for Endothelial Keratoplasty	1,890		1,523	

2016 International Eye Banking Statistics Indications for Corneal Transplant

2016 Indications for Penetrating Keratoplasty - International Eye Banks



2011-2016 Trends in Common PK Surgical Indications - International Eye Banks



2016 International Eye Banking Statistics Indications for Corneal Transplant

Indications for PK - International Eye Banks														
Year	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
2012 Avg.	10.0%	18.1%	3.8%	12.1%	4.7%	0.2%	2.5%	3.5%	1.8%	0.0%	3.3%	10.3%	3.1%	26.6%
2013 Avg.	12.3%	20.9%	3.5%	21.2%	3.5%	0.2%	9.7%	6.0%	1.1%	0.0%	3.5%	3.5%	5.5%	9.1%
2014 Avg.	9.2%	20.1%	4.0%	22.4%	2.3%	0.4%	9.0%	8.1%	1.6%	0.0%	4.4%	3.4%	4.7%	10.5%
2015 Avg.	10.8%	19.9%	4.3%	17.5%	2.4%	0.1%	9.1%	5.7%	1.7%	0.0%	3.9%	3.6%	7.2%	13.8%
2016 Avg.	7.9%	17.7%	3.6%	20.4%	3.6%	0.5%	8.6%	7.3%	1.7%	0.3%	4.9%	2.1%	8.1%	12.0%
Std. Dev.	3.1%	5.6%	2.4%	5.1%	1.5%	0.9%	3.3%	2.4%	1.3%	0.8%	2.2%	1.7%	3.6%	7.4%

*Percentages read from this table should be read as "of the tissue used for PK"

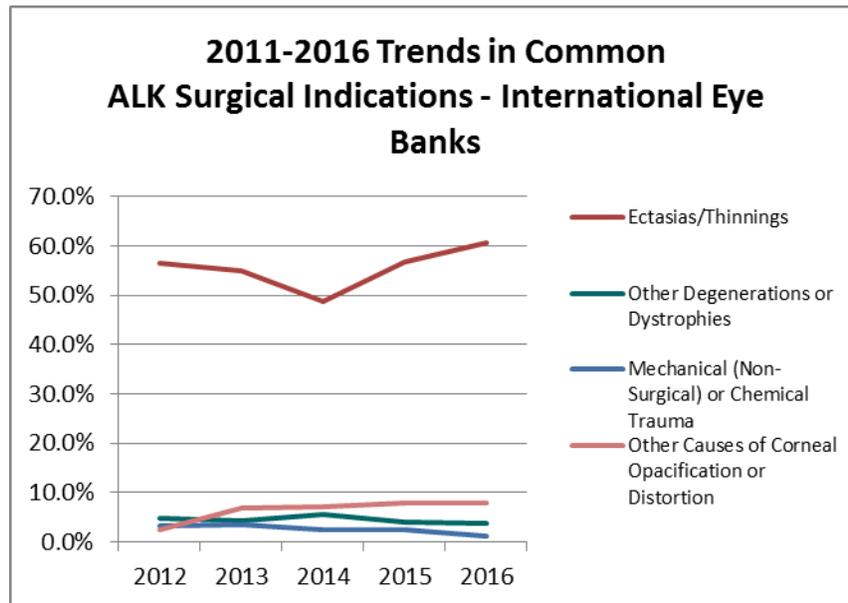
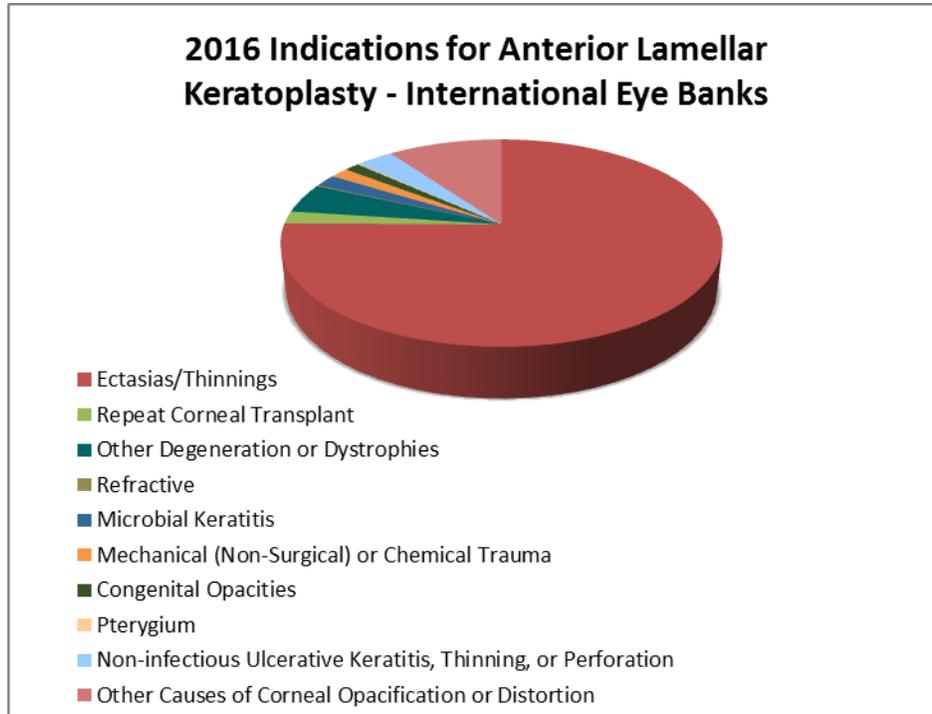
Indications for ALK - International Eye Banks														
Year	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
2012 Avg.		56.6%		3.3%	4.9%	0.0%	4.9%	3.3%	4.1%	0.0%	1.6%	2.5%		18.9%
2013 Avg.		55.0%		1.9%	4.4%	0.6%	2.5%	3.5%	1.8%	0.2%	2.8%	6.9%		41.4%
2014 Avg.		48.7%		1.4%	5.5%	0.4%	1.6%	2.4%	1.4%	0.3%	2.6%	7.2%		38.5%
2015 Avg.		56.8%		2.3%	4.0%	0.8%	2.5%	2.4%	1.9%	0.2%	3.7%	7.8%		36.0%
2016 Avg.		60.6%		1.6%	3.7%	0.2%	1.5%	1.3%	1.0%	0.1%	2.6%	8.0%		49.3%
Std. Dev.		14.6%		6.2%	12.1%	6.0%	10.6%	11.8%	4.4%	0.0%	4.0%	6.2%		5.5%

*Percentages read from this table should be read as "of the tissue used for ALK"

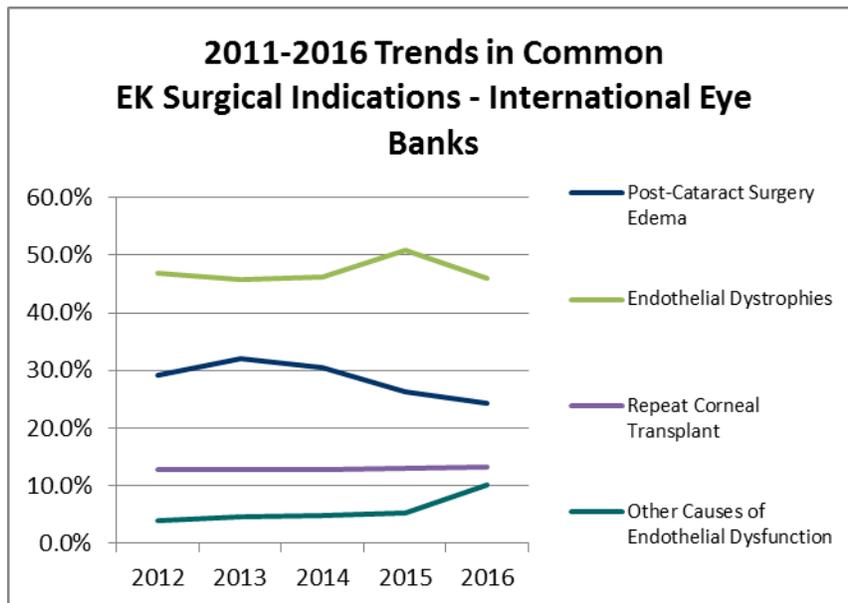
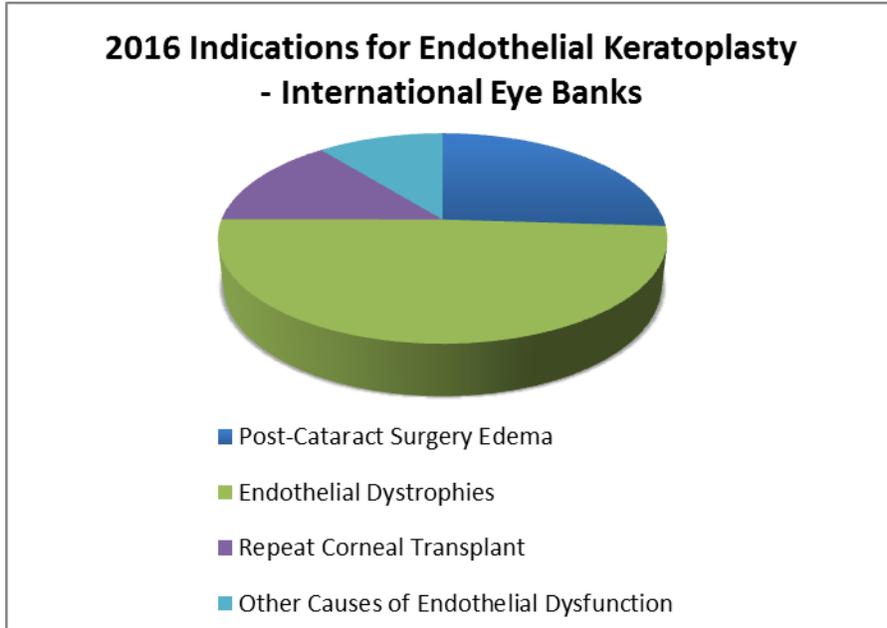
Indications for EK - International Eye Banks														
Month	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
2012 Avg.	29.2%		46.8%	12.7%									3.9%	7.4%
2013 Avg.	31.9%		45.8%	12.8%									4.6%	4.8%
2014 Avg.	30.5%		46.3%	12.8%									4.9%	5.6%
2015 Avg.	26.3%		50.8%	13.1%									5.3%	4.6%
2016 Avg.	24.3%		45.9%	13.2%									10.1%	6.4%
Std. Dev.	4.9%		5.3%	3.3%									4.0%	3.3%

*Percentages read from this table should be read as "of the tissue used for EK"

2016 International Eye Banking Statistics Indications for Corneal Transplant

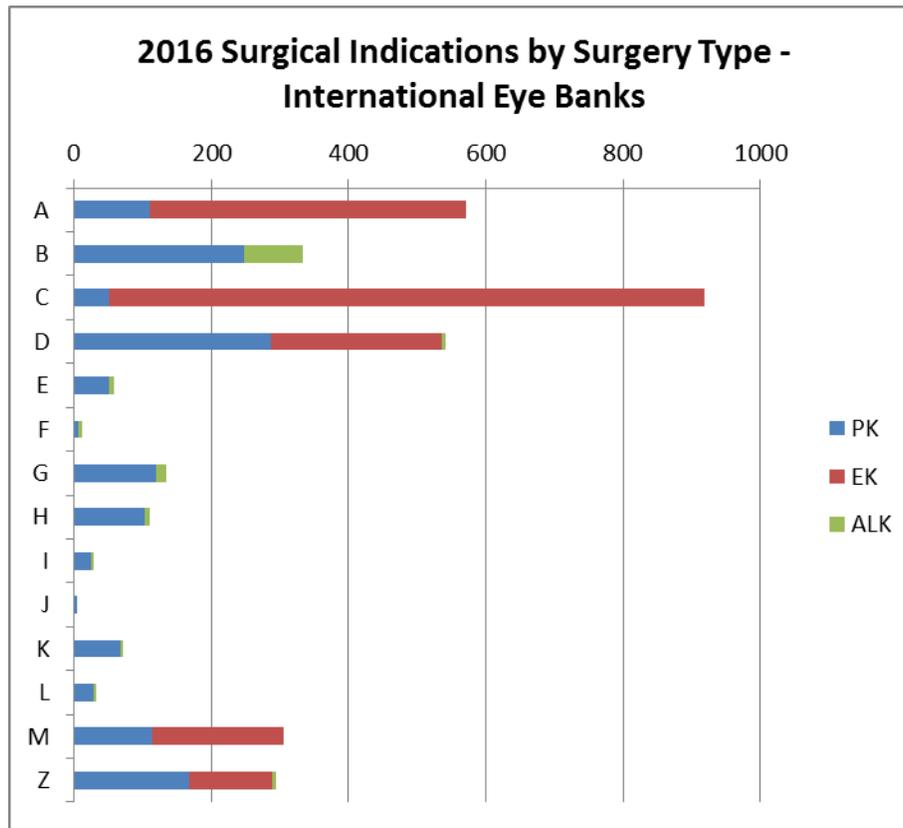


2016 International Eye Banking Statistics Indications for Corneal Transplant



2016 International Eye Banking Statistics Indications for Corneal Transplant

Indications for Keratoplasty - International Eye Banks 2016														
	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
PK	111	247	50	286	51	7	120	102	24	4	68	29	114	168
EK	460		868	250									191	121
ALK		86		5	7	4	14	9	4	0	3	4		6



- 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

Eye Banks Submitting Data for the 2016 Eye Banking Statistical Report

STATE	EYE BANK NAME	CITY
AL	Alabama Eye Bank	Birmingham
AR	Arkansas Lions Eye Bank & Laboratory	Little Rock
AZ	Donor Network of Arizona	Phoenix
CA	California Transplant Services	Carlsbad
	One Legacy	Los Angeles
	San Diego Eye Bank	San Diego
	Sierra Donor Services	Sacramento
CO	Rocky Mountain Lions Eye Bank	Aurora
FL	Florida Lions Eye Bank	Miami
	International Sight Restoration	Tampa
	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	Idaho Lions Eye Bank	Boise
IN	Indiana Lions Eye & Tissue Transplant Bank	Indianapolis
KS	Kansas Eye Bank & Cornea Research Center	Wichita
KY	Kentucky Lions Eye Bank	Lexington
	Kentucky Lions Eye Bank	Louisville
LA	Baton Rouge Regional Eye Bank	Baton Rouge
	Southern Eye Bank	Metairie
MD	KeraLink Corporate	Baltimore
MI	Eversight Corporate	Ann Arbor
MN	Minnesota Lions Eye Bank	Minneapolis
MO	Mid-America Transplant	St. Louis
	Saving Sight	Columbia
MS	Mississippi Lions Eye Bank	Flowood
NC	Lifeshare of the Carolinas	Charlotte
	Miracles in Sight.	Winston-Salem
NE	Lions Eye Bank of Nebraska, Inc.	Omaha
NV	Nevada Donor Network, Inc.	Las Vegas
NY	Central New York Eye Bank	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
	Upstate New York Transplant Services, Inc.	Buffalo

STATE	EYE BANK NAME	CITY
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
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
	SightLife - Northeast	Bethlehem
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
	Tennessee Donor Services	Nashville
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
	Lions Eye Bank of Saskatchewan	Saskatoon, SK
Germany	Hornhautbank Munich gGmbH	Munich
Japan	Cornea Center & Eye Bank	Ichikawa City
Hong Kong	Hospital Authority Eye Bank	Kowloon
China	Daqing Eye Bank	Daqing