Associate degree analysis

- **Data Source and Intro**
  - ✓ All used datasets: (XPrograms, tblAwards, tblMergeX)
  - ✓ Detailed info for each dataset:

    We would use students earned associate degree(s) in most recent ten years because some degrees have been eliminated (2009-2019)

Table	Number of records	Filtering
XPrograms	3517	
tblAwards	54304 (from 198509)	21102 (Grad 200909-201905)
tblMergeX	391284	

- **Some preparation before the analysis**
  - ✓ Merge XPrograms and tblAwards to hold "required credits" info in tblAwards
  - ✓ Filter only Associate Degree in tblAwards for further analysis (6953 records left)
  - ✓ Counted unique PIDM in tblAwards (6364 PIDM)
  - ✓ Calculate "Excess Credits" by subtracting "Program_Credits" from "Credits_Earned"
  - ✓ Filter out negative "Excess Credits"(112 records deleted, 6229 unique PIDM)

- **Analytical Tools**

  Python-Pandas & Google COLAB

- **Analysis**
  - A. Students with NO transfer credits – all earned from WCC (4089/6811 records)
    - ✓ A.1 Students earned only one associate degree (3294/4089 records)
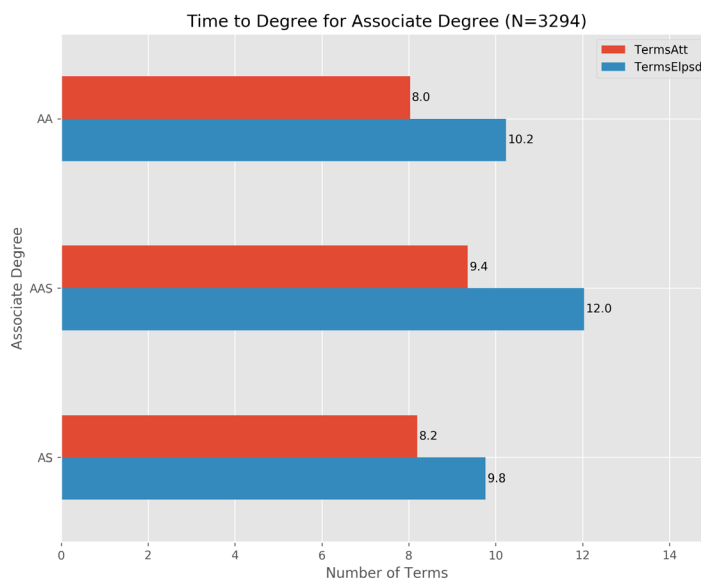
      A.1.1 Time to degree

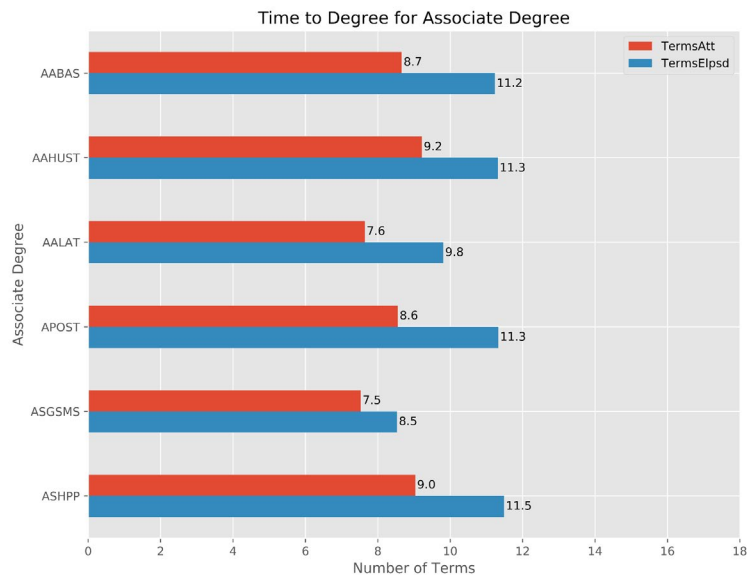Fig A.1.1.1 Time to Degree for Associate by different degrees

Fig A.1.1.2 Time to Degree for Associate by programs with more than 100 completers
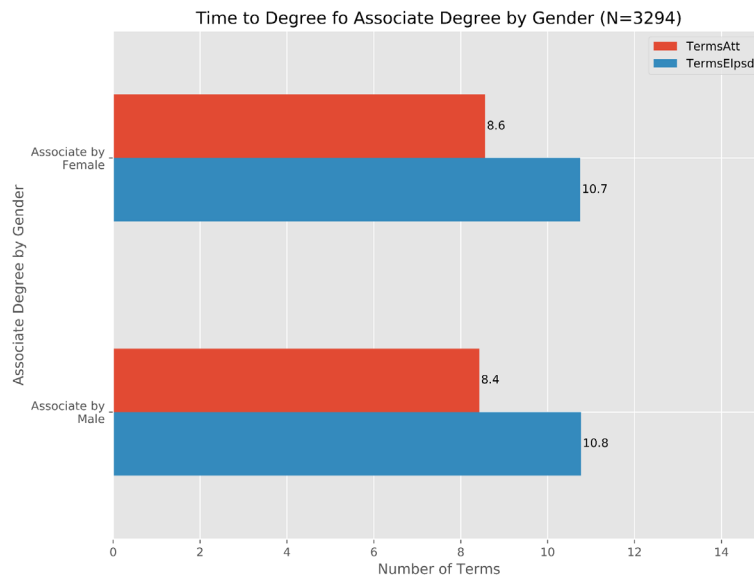

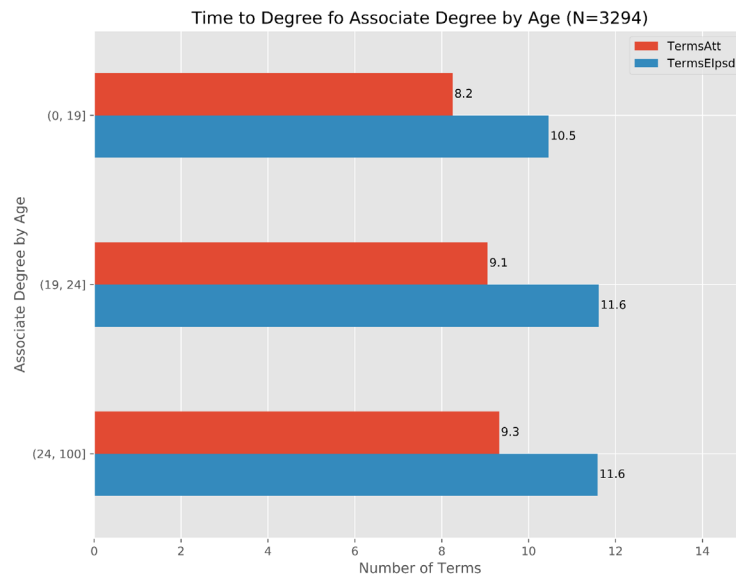Fig A.1.1.3 Time to Degree for Associate by Gender

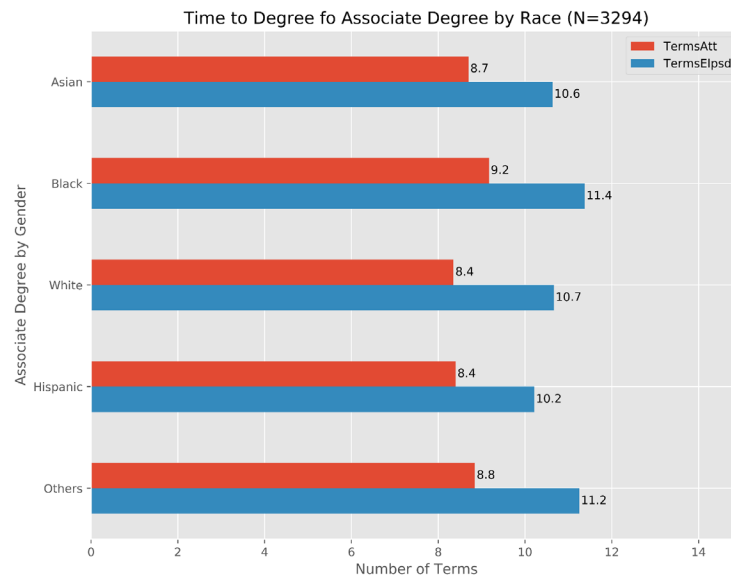Fig A.1.1.4 Time to Degree for Associate by Age
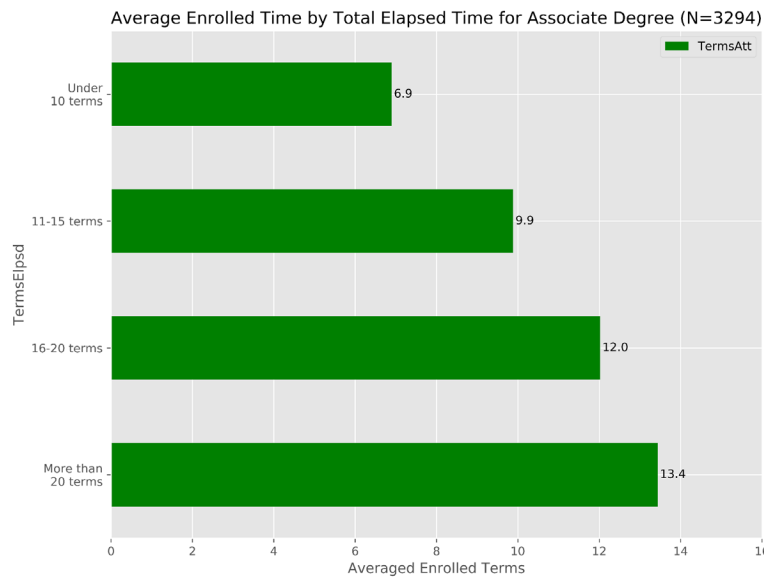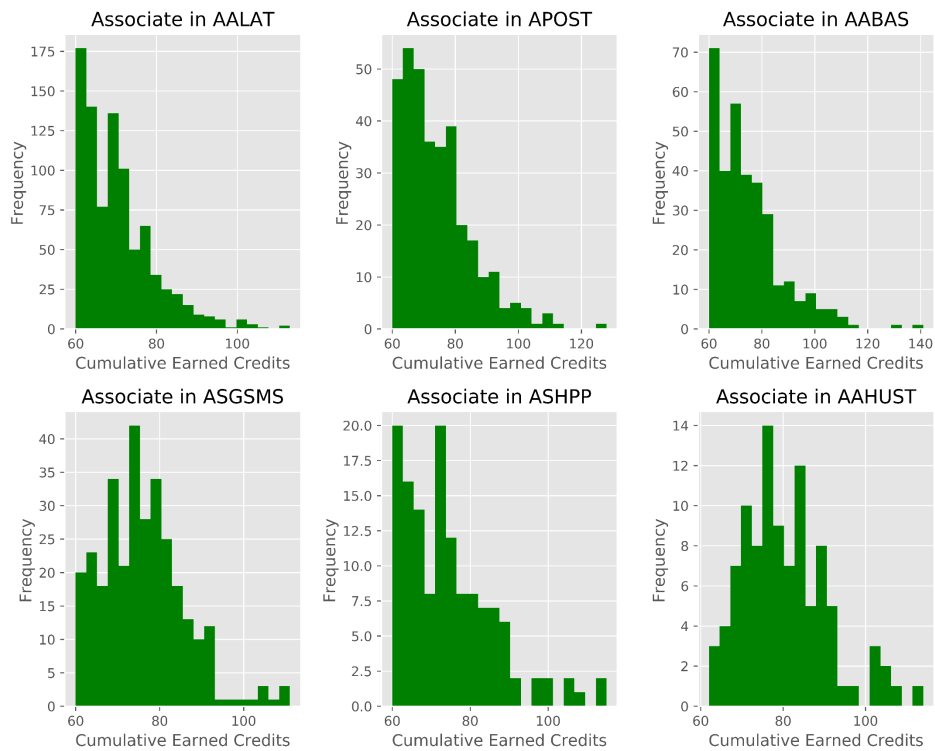

Fig A.1.1.5 Time to Degree for Associate by Race

Fig A.1.1.6 Average Enrolled Time by Total Elapsed Time for Associate Degree

Fig A.1.1.7 Histograms for each of the groups
(For those had no prior credits and earned one associate degree)

Table A.1.2 Statistics on Excess Credits for the Top 30 Associate Degree Programs in Terms of Completers

Programs	Completers	Completers with Excess Credits	Share of Completers with Excess Credits	ProgCredits	Median Credits	Mean Credits	Maximum Credits	Median Excess Credits (for those with them)	Mean Excess Credits (for those with them)	Maximum Excess Credits (for those with them)
AALAT	878	795	90.55%	60	68	70.23	113	8	10.23	53
APOST	339	324	95.58%	60	72	73.94	128	12	13.94	68
AABAS	328	305	92.99%	60	72	74.88	141	12	14.88	81
ASGSMS	309	305	98.71%	60	75	76.02	111	15	16.02	51
ASHPP	137	125	91.24%	60	73	74.42	115	13	14.42	55
AAHUST	101	101	100.00%	61	79	80.48	114	18	19.49	53
AACJ	93	92	98.92%	63	84	85.38	120	21	22.57	57
APNURS	90	90	100.00%	72	100.75	100.47	124.5	32.5	31.51	60
AASECO	73	70	95.89%	60	69	72.03	101	9	12.03	41
AAELEM	68	64	94.12%	63	74	74.52	106	11	11.86	43
APGRD	54	53	98.15%	64.5	81.25	84.18	128	16.25	19.19	66
APASRV	52	46	88.46%	60	70	72.90	115	10	12.90	55
APPHOT	42	41	97.62%	64	73.75	76.75	112	11	14.04	48
ASMSAS	40	40	100.00%	61	84.25	86.65	143	21	24.28	83
APWLDT	40	40	100.00%	66	77.5	80.65	107	12	15.18	41
APANIM	39	38	97.44%	62	74	79.01	116	12	16.24	54
APNURE	38	37	97.37%	71	96	98.97	126	21.75	25.32	55
APACCT	36	35	97.22%	65	76	77.81	99	11.5	12.83	34
APCULD	35	35	100.00%	67	87	88.13	118.5	18	20.87	47.5
APRAD	33	32	96.97%	69	84	86.59	127	12.5	17.68	58
ASCSPJ	32	32	100.00%	62	78.5	83.83	143.5	15.25	21.52	79.5
AADVP	30	30	100.00%	62	72.75	75.03	89	11	13.57	29
APCSN	28	28	100.00%	61	81.75	86.21	123	19.75	24.18	62
APBOAD	25	25	100.00%	63	85	84.26	104	22	21.26	41
APCNTM	23	23	100.00%	61	74	74.41	101	13	13.76	40
APCCP	20	19	95.00%	60	73.5	78.55	111	13.5	18.30	51
AAJOUR	19	18	94.74%	60	71	72.00	91	11	12.00	31
APHVCR	17	17	100.00%	63	73	75.85	92.5	10	13.38	29.5
APMNGD	17	16	94.12%	60	69	73.62	94	9	13.62	34
APPTA	15	15	100.00%	65	87	88.57	116	22	24.43	51

Table A.1.2(Degree) Statistics on Excess Credits for Associate Degree Programs in Terms of Completers

Degree	Completers	Completers with Excess Credits	Share of Completers with Excess Credits	ProgCredits	Median Credits	Mean Credits	Maximum Credits	Median Excess Credits (for those with them)	Mean Excess Credits (for those with them)	Maximum Excess Credits (for those with them)
AA	1651	1534	92.91%	60	71	73.23	141	10	12.80	81
AAS	1092	1060	97.07%	61	77.75	80.81	142	15	18.14	78
AS	551	535	97.10%	60	76	77.23	143.5	15	16.67	83

✓ A.2 Students more than one associate degrees (389 unique records)
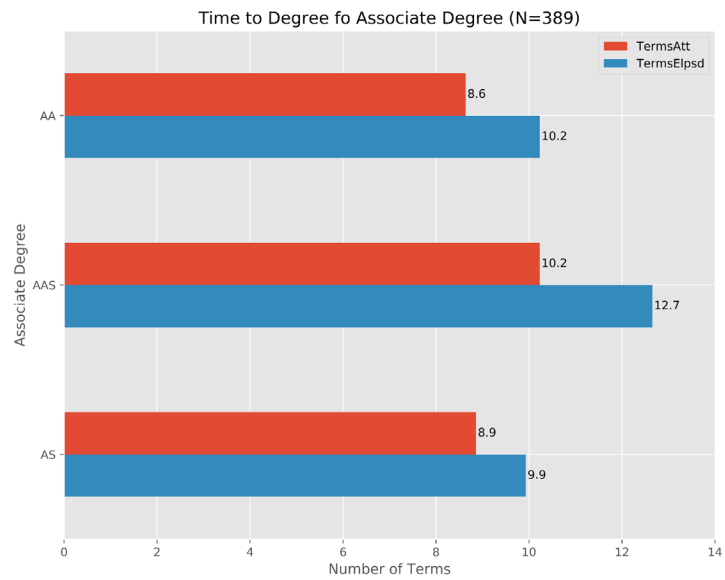A.2.1 Time to Degree

Fig A.2.1.1 Time to Degree for Associate by different degrees
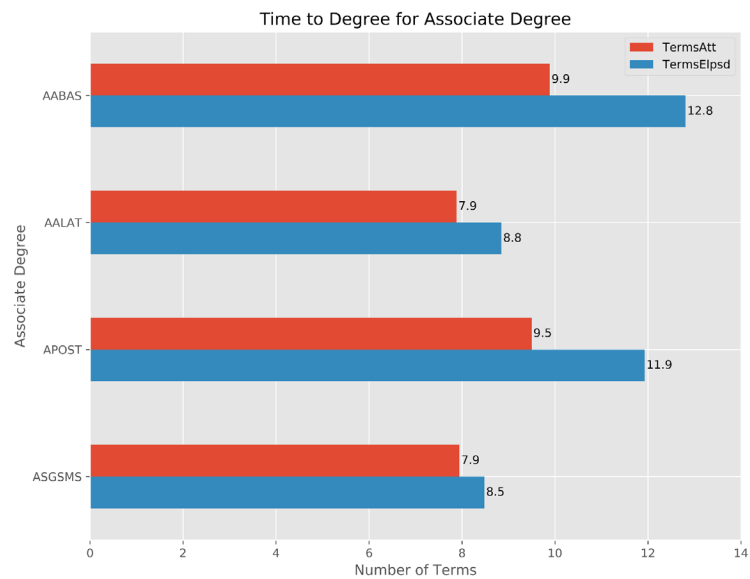

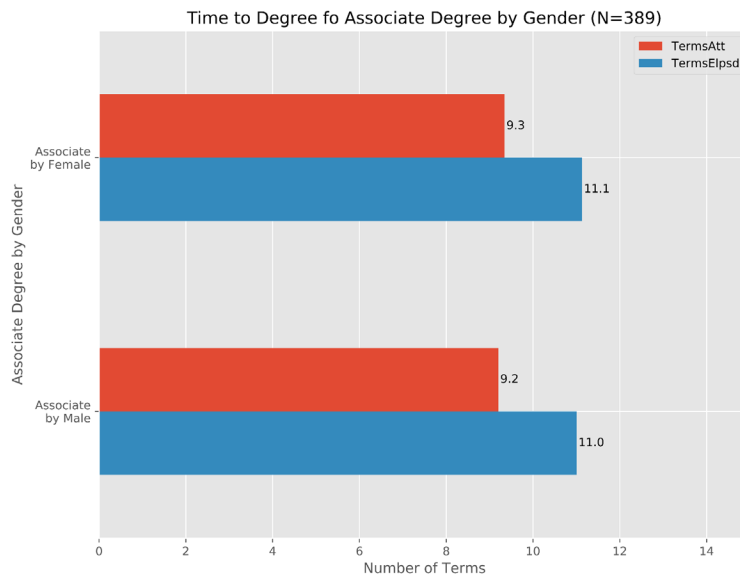Fig A.2.1.2 Time to Degree for Associate by programs with more than 50 completers

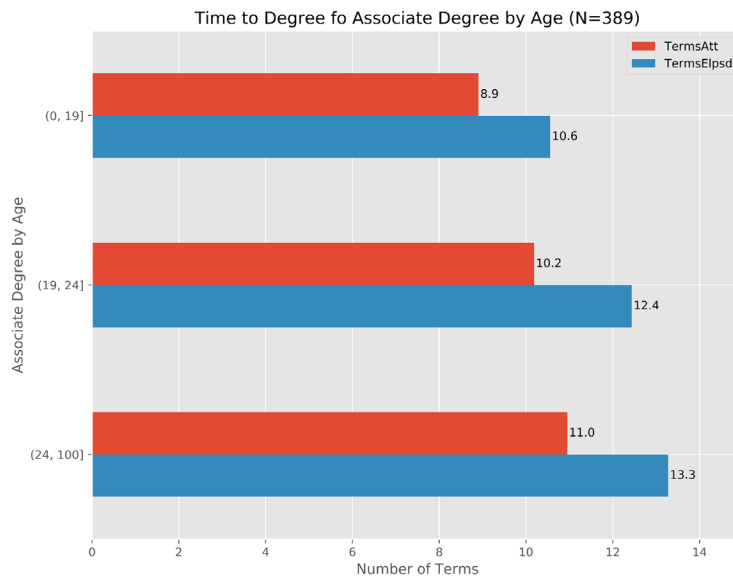Fig A.2.1.3 Time to Degree for Associate by Gender
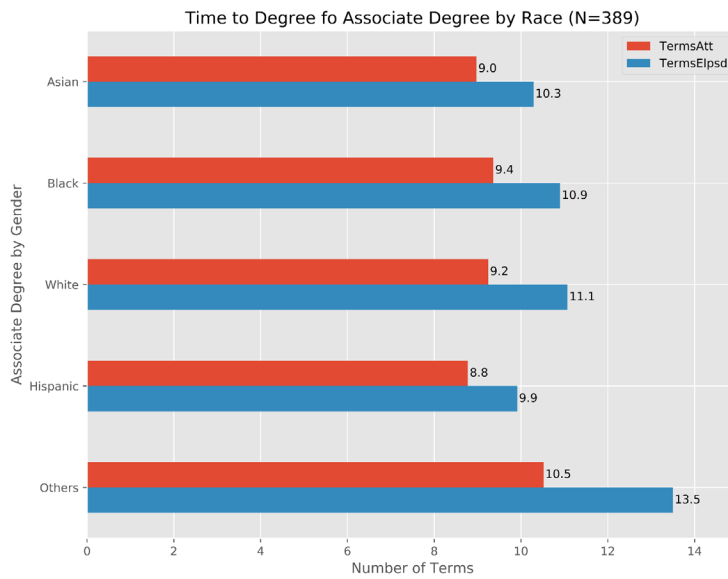

Fig A.2.1.4 Time to Degree for Associate by Age
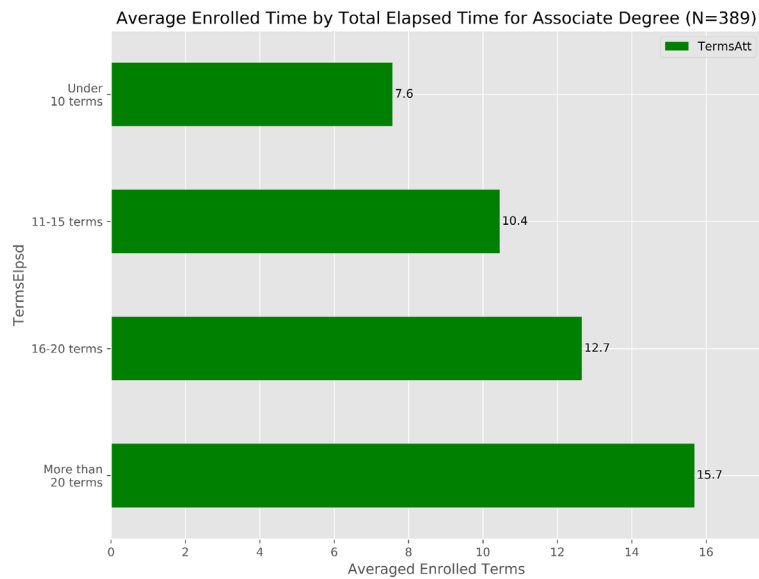
Fig A.2.1.5 Time to Degree for Associate by Race

Fig A.2.1.6 Average Enrolled Time by Total Elapsed Time for Associate Degree

Table A.2.2 Statistics on Excess Credits for the Top 30 Associate Degree Programs in Terms of Completers

Programs	Completers	Completers with Excess Credits	Share of Completers with Excess Credits	ProgCredits	Median Credits	Mean Credits	Maximum Credits	Median Excess Credits (for those with them)	Mean Excess Credits (for those with them)	Maximum Excess Credits (for those with them)	Percent of Prior Credits
AALAT	182	177	97.25%	60	82	81.21	128	22	21.21	68	26.11%
APOST	139	138	99.28%	60	88	89.70	133	28	29.70	73	33.11%
ASGSMS	106	106	100.00%	60	83	83.99	110	23	23.99	50	28.56%
AABAS	62	61	98.39%	60	89	90.38	142	29	30.38	82	33.61%
ASHPP	40	40	100.00%	60	84	86.58	147	24	26.58	87	30.70%
AACJ	16	16	100.00%	63	90.25	91.59	113	28.25	29.72	53	32.45%
APANIM	13	13	100.00%	63	85	90.38	128	22	27.54	66	30.47%
APWLDT	12	12	100.00%	66	89	98.63	143	23.5	32.88	77	33.33%
APNURS	12	12	100.00%	65.5	120	125.08	145	57.25	59.25	77	47.37%
APNURE	11	11	100.00%	71	109	116.00	147	33	42.82	76	36.91%
AAHUST	11	11	100.00%	61	85	90.14	113	24	29.14	52	32.32%
APACCT	10	10	100.00%	65	87.5	95.80	150	22.5	30.90	85	32.25%
APPHOT	9	9	100.00%	62	93	100.39	143	32	38.17	79	38.02%
APCSN	8	8	100.00%	62	100.25	102.94	129.5	35.5	40.19	68.5	39.04%
ASISPC	8	8	100.00%	63	92.5	96.63	121	29	33.63	58	34.80%
APCULD	8	8	100.00%	66.5	103	101.56	121	36	35.06	54	34.52%
APSCM	8	8	100.00%	60	82	82.38	95	22	22.38	35	27.16%
APGRD	7	7	100.00%	64	91	91.00	114	26	27.00	52	29.67%
AASECO	7	7	100.00%	60	83	84.00	97	23	24.00	37	28.57%
ASMSAS	7	7	100.00%	61	96	101.64	121	35	40.07	60	39.42%
APMNGD	7	7	100.00%	60	83	84.00	92	23	24.00	32	28.57%
AADVP	7	7	100.00%	62	89	88.14	109	27	26.71	47	30.31%
APASRV	6	6	100.00%	60	85	90.75	117	25	30.75	57	33.88%
APBPA	6	6	100.00%	62	103	107.67	133	41	46.00	71	42.72%
AAJOUR	5	5	100.00%	60	83	82.70	94	23	22.70	34	27.45%
AAGS	5	5	100.00%	61	83	84.60	94	22	23.80	34	28.13%
ASCSPJ	5	5	100.00%	62	95	93.50	121	33	30.70	59	32.83%
AAELEM	5	5	100.00%	63	86	86.00	101.5	23	23.00	38.5	26.74%
AACMG	5	5	100.00%	66	105	109.50	160	36	44.10	100	40.27%
AATCD	5	5	100.00%	60	87	91.10	110	27	29.50	50	32.38%

Table A.2.2(Degree) Statistics on Excess Credits for Associate Degree Programs in Terms of Completers

Degree	Completers	Completers with Excess Credits	Share of Completers with Excess Credits	ProgCredits	Median Credits	Mean Credits	Maximum Credits	Median Excess Credits (for those with them)	Mean Excess Credits (for those with them)	Maximum Excess Credits (for those with them)
AA	322	316	98.14%	60	83.75	85.07	160	23.25	24.67	100
AAS	300	299	99.67%	60	92	95.56	163	30	33.76	103
AS	173	173	100.00%	60	84	86.74	147	24	26.32	87

🎇 B. Students had transferred credits from prior college(s)

✓ B.1 Students earned only one associate degree (2397/2722 records)
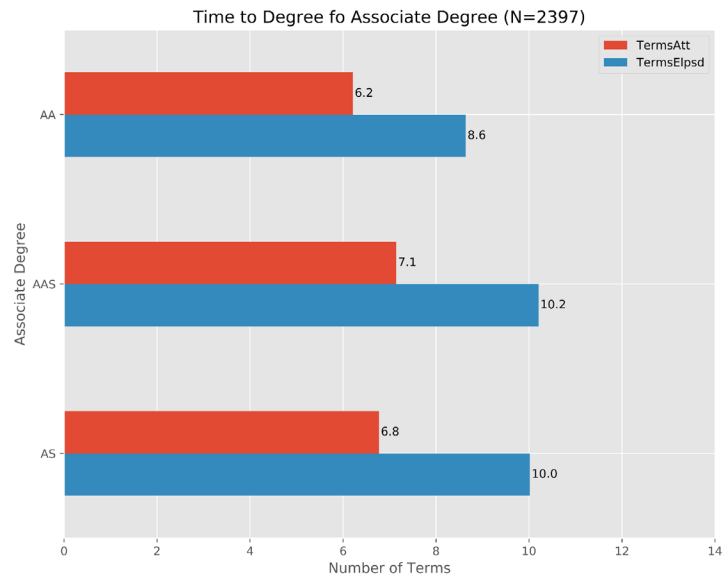
B.1.1 Time to degree

Fig B.1.1.1 Time to Degree for Associate by different degrees
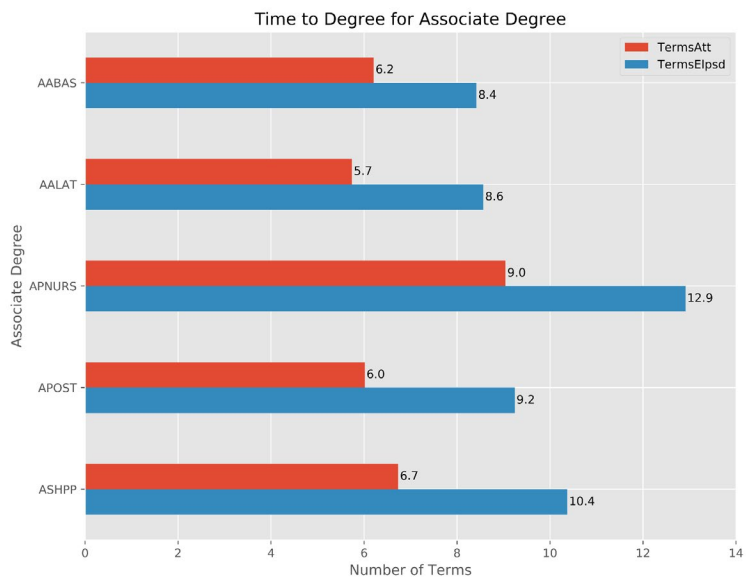

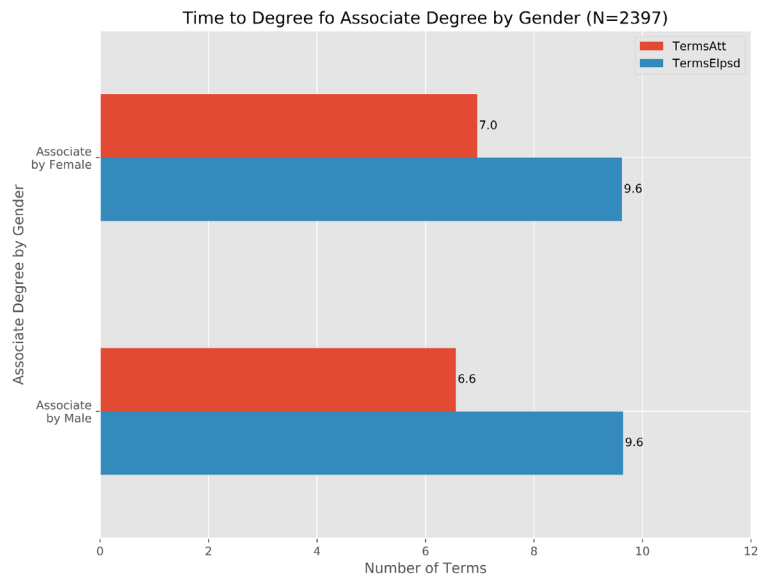Fig B.1.1.2 Time to Degree for Associate by programs with more than 100 completers

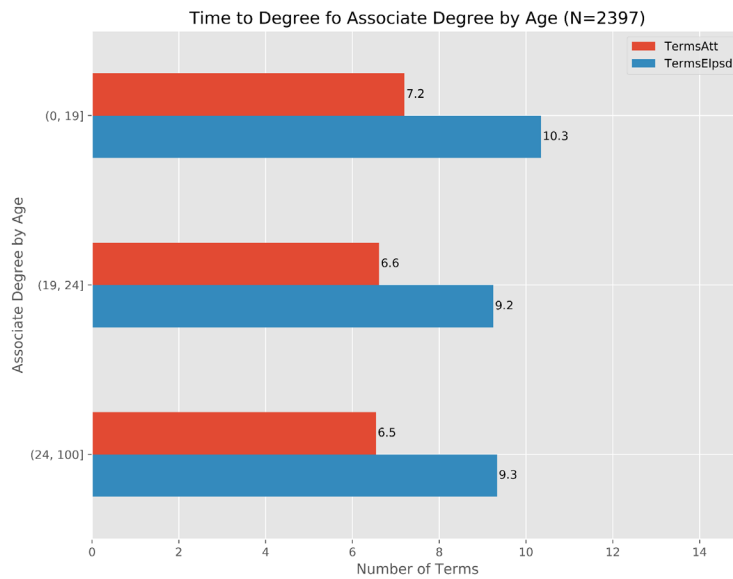Fig B.1.1.3 Time to Degree for Associate by Gender
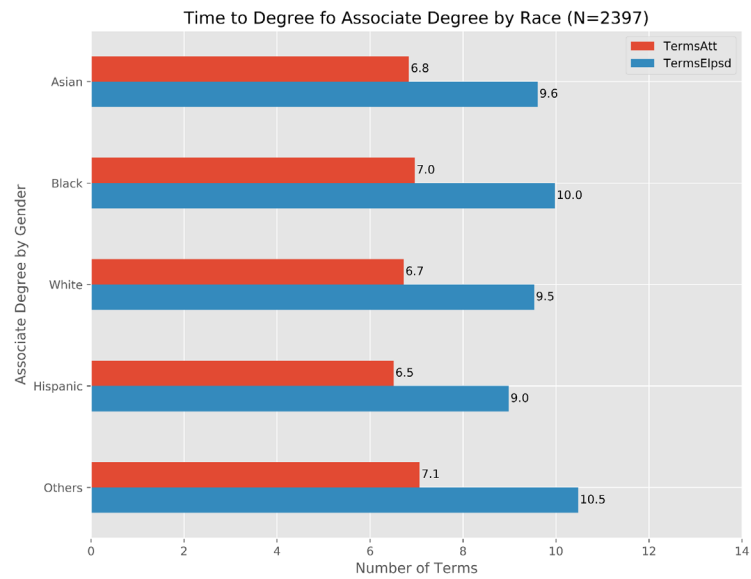

Fig B.1.1.4 Time to Degree for Associate by Age
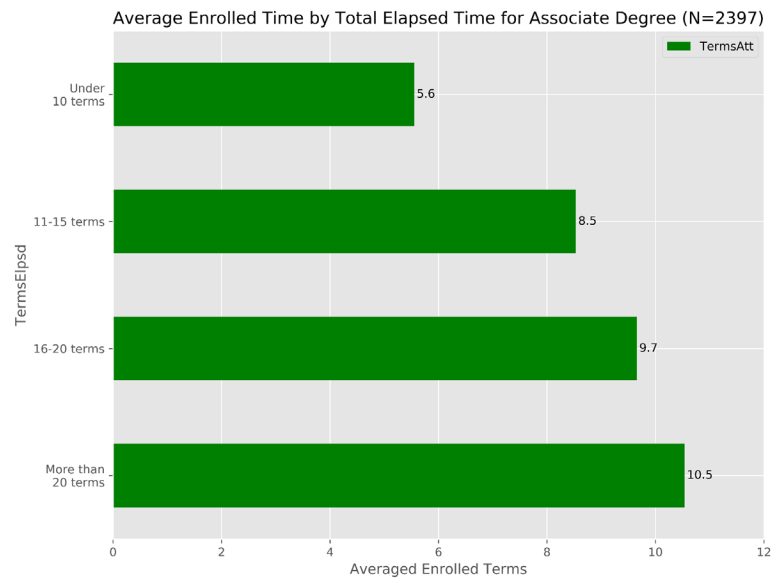
Fig B.1.1.5 Time to Degree for Associate by Race

Fig B.1.1.6 Average Enrolled Time by Total Elapsed Time for Associate Degree

Table B.1.2 Statistics on Excess Credits for the Top 30 Associate Degree Programs in Terms of Completers

Programs	Completers	Completers with Excess Credits	Share of Completers with Excess Credits	ProgCredits	Median Credits	Mean Credits	Maximum Credits	Median Excess Credits (for those with them)	Mean Excess Credits (for those with them)	Maximum Excess Credits (for those with them)	Percent of Prior Credits
AALAT	364	328	90.11%	60	68	70.69	110	8	10.69	50	31.09%
APOST	257	239	93.00%	60	69.5	73.78	137	9.5	13.78	77	37.94%
AABAS	220	213	96.82%	60	73	73.99	108	13	13.99	48	31.01%
APNURS	184	184	100.00%	72	100	102.34	150	29	32.15	78	28.28%
ASHPP	113	107	94.69%	60	71	73.35	109	11	13.35	49	32.00%
ASGSMS	91	84	92.31%	60	73	75.18	144.5	13	15.18	84.5	26.43%
APCNSP	81	72	88.89%	60	63	67.02	91	3	7.02	31	61.07%
APITRN	63	48	76.19%	60	63	66.71	94	3	6.71	34	67.92%
AAHUST	60	60	100.00%	61	83	84.80	121.5	22	23.85	60.5	24.15%
AACJ	53	53	100.00%	63	88	87.45	118	25	24.57	55	28.18%
APPTA	42	41	97.62%	65	87.5	88.86	112	23	24.95	47	36.92%
APRAD	41	41	100.00%	69	93.5	92.70	125	23	23.06	53	33.00%
APGRD	38	37	97.37%	64	88	88.13	127.5	21.75	23.61	63.5	23.92%
APWLDT	37	37	100.00%	66	82	84.89	110	18	19.38	44	19.61%
APCCP	37	35	94.59%	60	77	79.42	137	17	18.96	77	23.46%
APPHOT	37	37	100.00%	64	79	83.61	132	17	20.74	68	27.96%
APCSN	37	37	100.00%	61	78	83.95	133	17	21.62	68	22.38%
APACCT	35	34	97.14%	65	75	80.47	119	10	15.50	54	25.78%
ASCSPJ	34	33	97.06%	62	77	79.01	107	15	17.01	43	29.07%
APCNTM	34	34	100.00%	61	80	85.00	135	19.5	24.38	75	30.59%
ASMSAS	31	31	100.00%	61	80.5	82.76	123	19	20.08	62	21.98%
AASECO	28	25	89.29%	60	68.5	72.32	107	8.5	12.32	47	23.95%
APASRV	28	27	96.43%	60	72	75.96	144	12	15.96	84	24.31%
APCULD	27	27	100.00%	67	87	89.26	119	19	21.04	48	24.02%
APBPA	24	24	100.00%	62	80	83.46	135	18.5	21.71	73	31.35%
AADVP	24	24	100.00%	62	77.5	81.77	113	15.5	20.19	51	26.14%
AAELEM	23	23	100.00%	63	73	77.91	98	10	15.26	36	32.70%
APANIM	20	19	95.00%	62	77	78.93	109	13	15.78	47	30.09%
APNURE	20	20	100.00%	77	95.75	96.53	109	21.5	22.23	36.5	13.99%
APBOAD	18	18	100.00%	63	79	78.78	86	15.75	15.67	23	21.93%

Table B.1.2(Degree) Statistics on Excess Credits for Associate Degree Programs in Terms of Completers

Degree	Completers	Completers with Excess Credits	Share of Completers with Excess Credits	ProgCredits	Median Credits	Mean Credits	Maximum Credits	Median Excess Credits (for those with them)	Mean Excess Credits (for those with them)	Maximum Excess Credits (for those with them)	Percent of Prior Credits
AAS	1243	1189	95.66%	61	80	82.69	150	17	19.98	84	33.32%
AA	839	791	94.28%	60	73	74.81	129	12	14.25	65	29.38%
AS	315	300	95.24%	60	74.5	77.08	146	14	16.14	84.5	29.25%

✓ B.2 Students earned more than one associate degrees
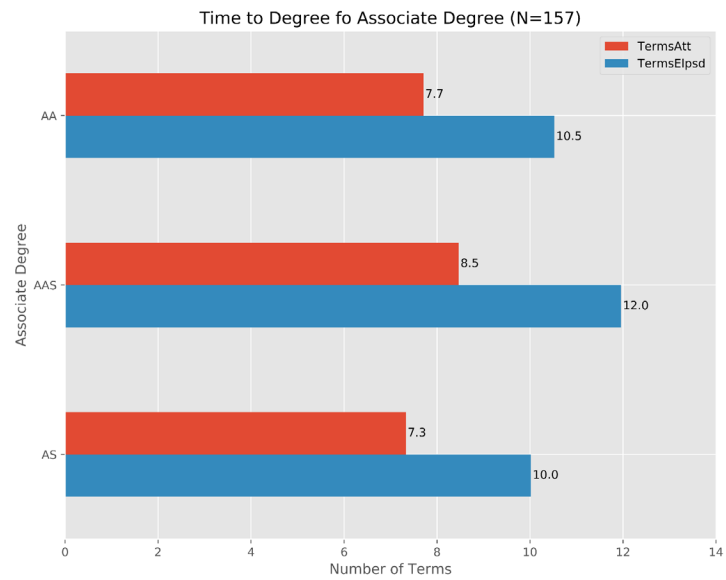B.2.1 Time to degree (157 unique records)

Fig B.2.1.1 Time to Degree for Associate by different degrees
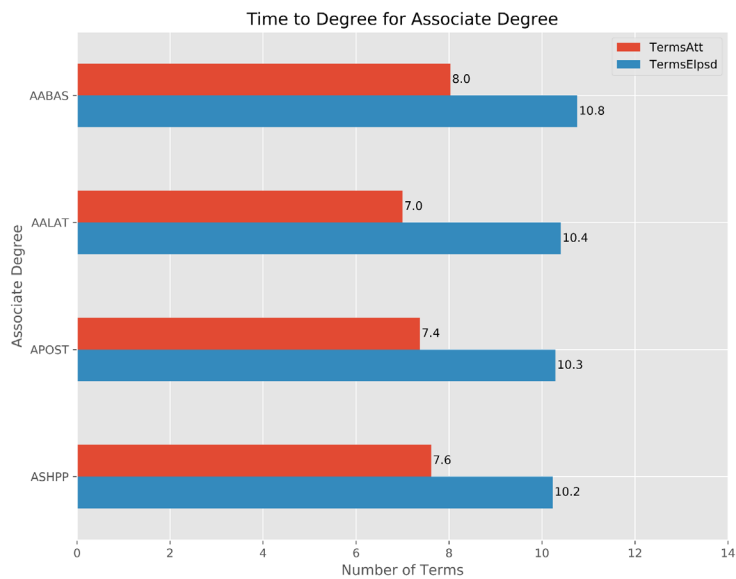

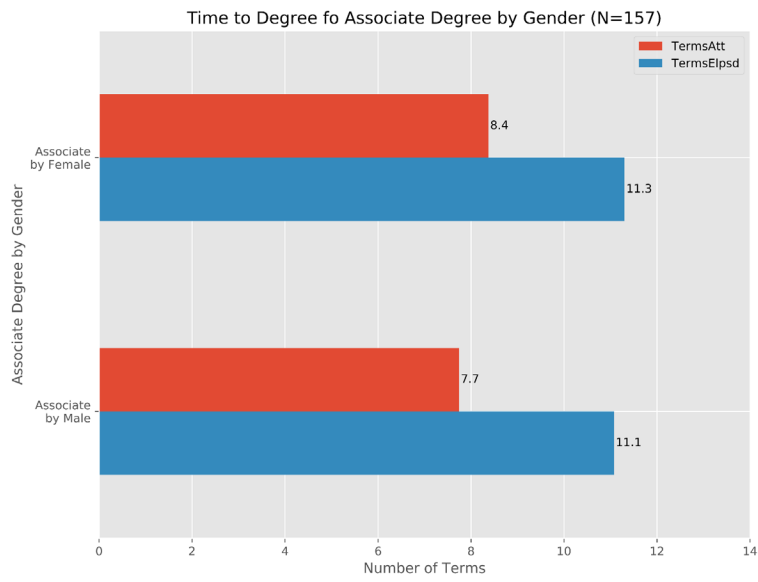Fig B.2.1.2 Time to Degree for Associate by programs with more than 20 completers

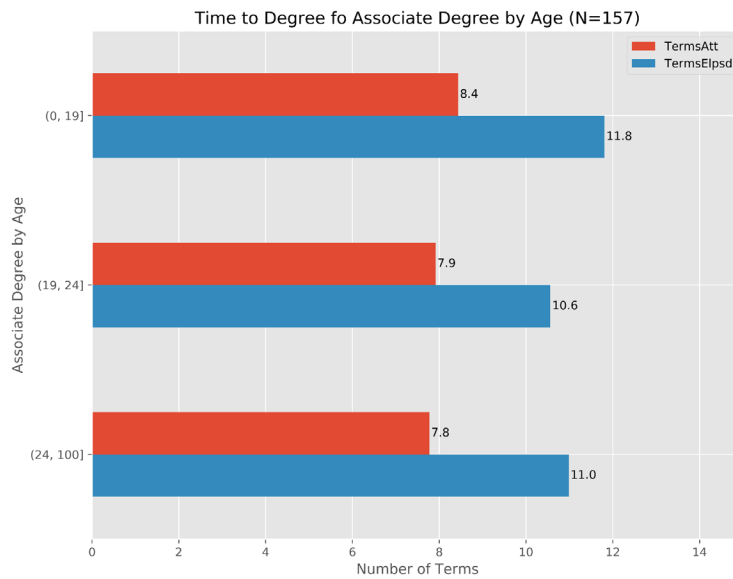Fig B.2.1.3 Time to Degree for Associate by Gender
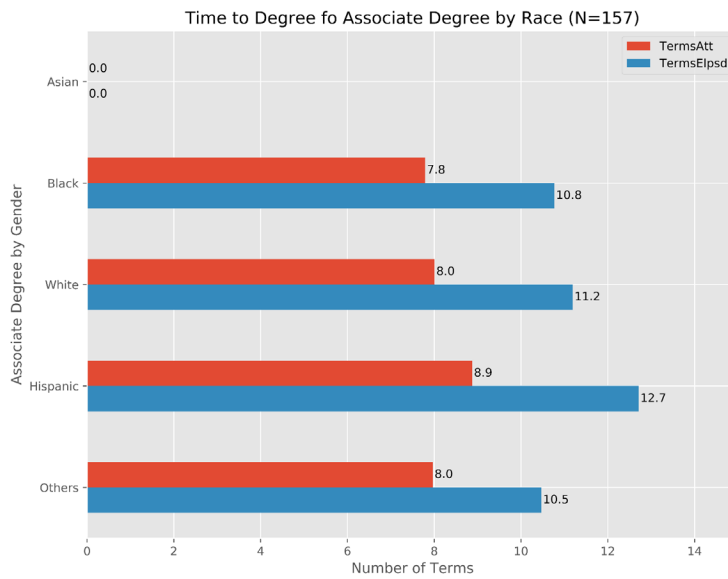

Fig B.2.1.4 Time to Degree for Associate by Age
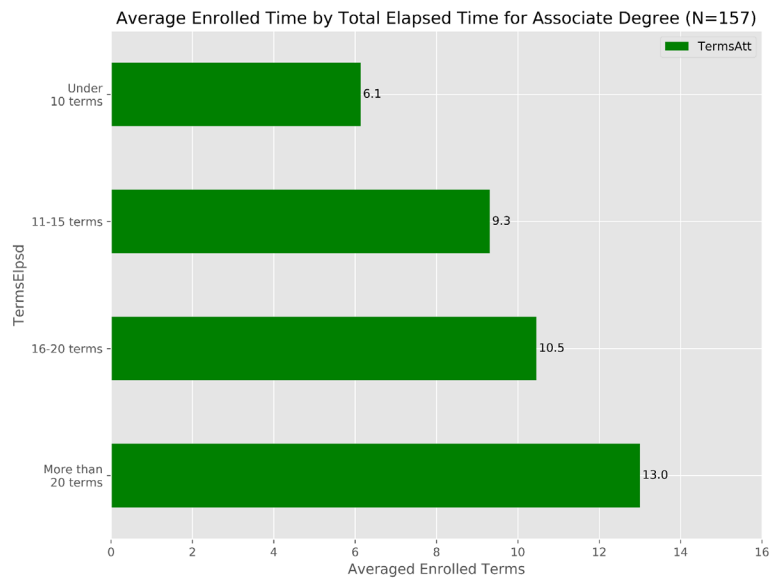
Fig B.2.1.5 Time to Degree for Associate by Race

Fig B.2.1.6 Average Enrolled Time by Total Elapsed Time for Associate Degree

Table B.2.2 Statistics on Excess Credits for Top 30 Associate Degree Programs in Terms of Completers

Degree	Completers	Completers with Excess Credits	Share of Completers with Excess Credits	ProgCredits	Median Credits	Mean Credits	Maximum Credits	Median Excess Credits (for those with them)	Mean Excess Credits (for those with them)	Maximum Excess Credits (for those with them)	Percent of Prior Credits
APOST	59	59	100.00%	60	86	89.44	140.5	26	29.44	80.5	28.84%
AALAT	40	39	97.50%	60	85	90.50	164.5	25	30.50	104.5	24.36%
AABAS	37	37	100.00%	60	90	92.31	132.5	30	32.31	72.5	24.51%
ASHPP	26	24	92.31%	60	80	80.56	125	20	20.56	65	19.72%
ASGSMS	13	13	100.00%	60	95	98.04	150	35	38.04	90	23.15%
APNURS	11	11	100.00%	72	118	120.73	140	50	51.00	69	12.27%
APACCT	11	11	100.00%	65	91	98.73	125	26	33.73	60	27.26%
AACJ	9	9	100.00%	63	101	97.28	106	35	33.94	46	22.96%
APCNSP	9	9	100.00%	60	84	83.83	93.5	24	23.83	33.5	57.79%
APITRN	8	8	100.00%	60	81.75	82.06	96.5	21.75	22.06	36.5	59.41%
APCULD	6	6	100.00%	67	92.25	100.17	133	25.75	33.50	66	23.96%
APMNGD	6	6	100.00%	60	89.5	90.75	111	29.5	30.75	51	39.12%
APMGTM	4	4	100.00%	60	84.5	97.00	139	24.5	37.00	79	31.70%
APPTA	4	4	100.00%	65	112.25	108.00	123.5	47.25	43.00	58.5	23.38%
AAELEM	4	4	100.00%	63	102.75	103.50	126	41.25	41.25	63	21.26%
ASMSAS	4	4	100.00%	61	83.5	85.63	98	23	24.88	37	28.32%
APHVCR	4	4	100.00%	61.5	76	80.75	106	13	19.25	46	21.36%
APANIM	3	3	100.00%	62	113	113.50	117	51	51.17	55	19.38%
APASRV	3	3	100.00%	60	77	93.17	127.5	17	33.17	67.5	25.40%
ASENVS	3	3	100.00%	62	112	106.17	119.5	52	44.83	57.5	22.61%
APNURE	3	3	100.00%	71	95.5	94.17	96	24.5	23.17	25	21.24%
AADVP	3	2	66.67%	62	102	93.33	116	40	31.33	54	15.71%
APJPIM	3	3	100.00%	60	84	83.00	99	24	23.00	39	51.41%
APCSN	3	3	100.00%	65	150	145.17	195	85	81.50	130	14.01%
APRM	2	2	100.00%	60.5	93.5	93.50	97	33	33.00	37	11.23%
APSTH	2	2	100.00%	61	68.75	68.75	70.5	7.75	7.75	9.5	69.45%
APWLDF	2	2	100.00%	69	103	103.00	120	34	34.00	51	8.74%
ASISPC	2	2	100.00%	63	122	122.00	143	59	59.00	80	25.82%
APGRD	2	2	100.00%	65	101.5	101.50	106	36.5	36.50	38	17.24%
APBPA	2	2	100.00%	62	72.75	72.75	77	10.75	10.75	15	17.18%

Table B.2.2(Degree) Statistics on Excess Credits for Associate Degree Programs in Terms of Completers

Degree	Completers	Completers with Excess Credits	Share of Completers with Excess Credits	ProgCredits	Median Credits	Mean Credits	Maximum Credits	Median Excess Credits (for those with them)	Mean Excess Credits (for those with them)	Maximum Excess Credits (for those with them)	Percent of Prior Credits
AAS	167	167	100.00%	60	90.5	95.86	195	29	33.63	132	28.33%
AA	107	104	97.20%	60	91	91.96	164.5	30	31.36	104.5	23.72%
AS	51	49	96.08%	60	82	89.33	150	22	28.94	90	22.57%