



# Using Evidence-Based Practices to Improve Operations: A Case Study in Admissions



# Decision Making Processes

Non-evidence-

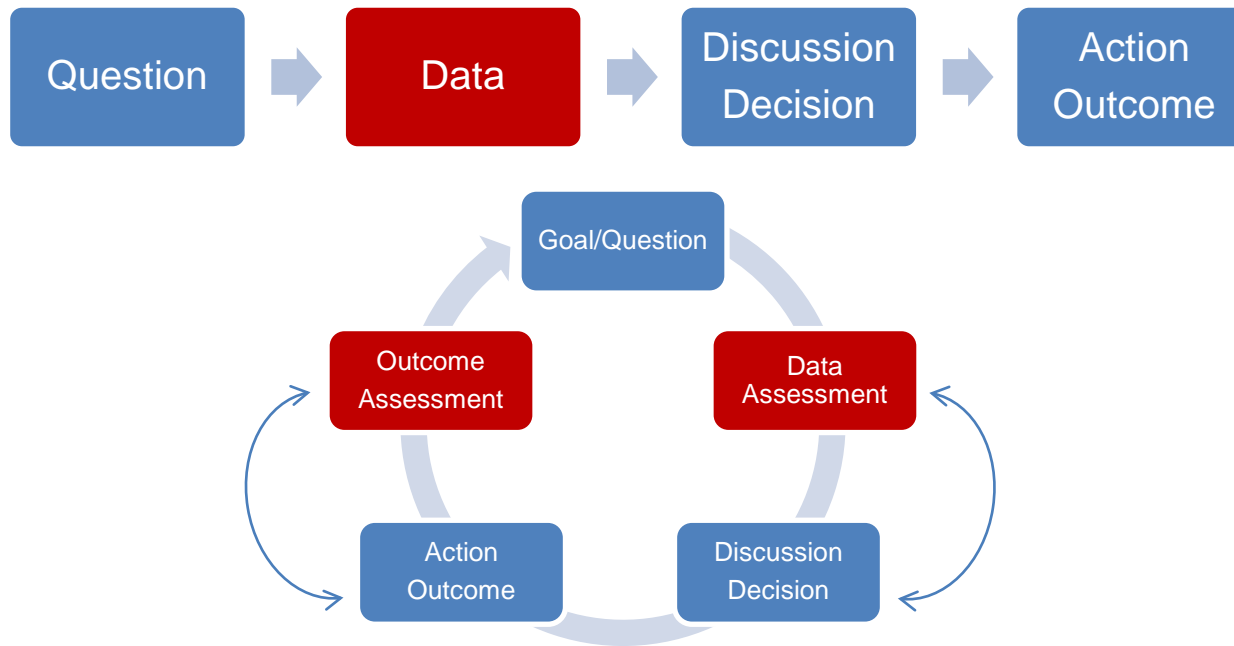
# Decision Making Processes

Evidence-based process

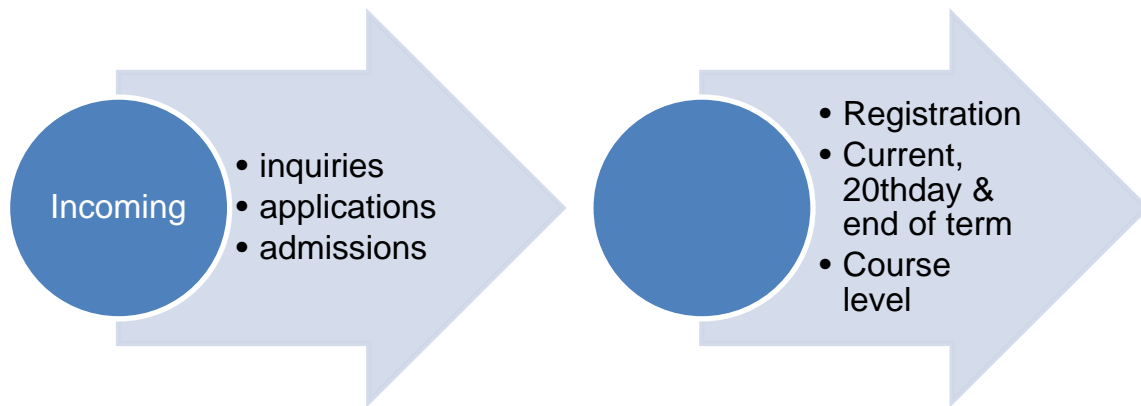
Inductive process (grounded theory)

Data/information contextualizes discussion

Assessment occurs BEFORE action



“How can we increase the number of applications?”



# Decision Support Systems (DSS)

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# Modeling & Scoring

*Targeting recruitment for greater yields:*

“How can we increase the number of applications?”

## Individual-level approach

- Identifying high yield recruits

- Probability estimation models

## Structural-level approach

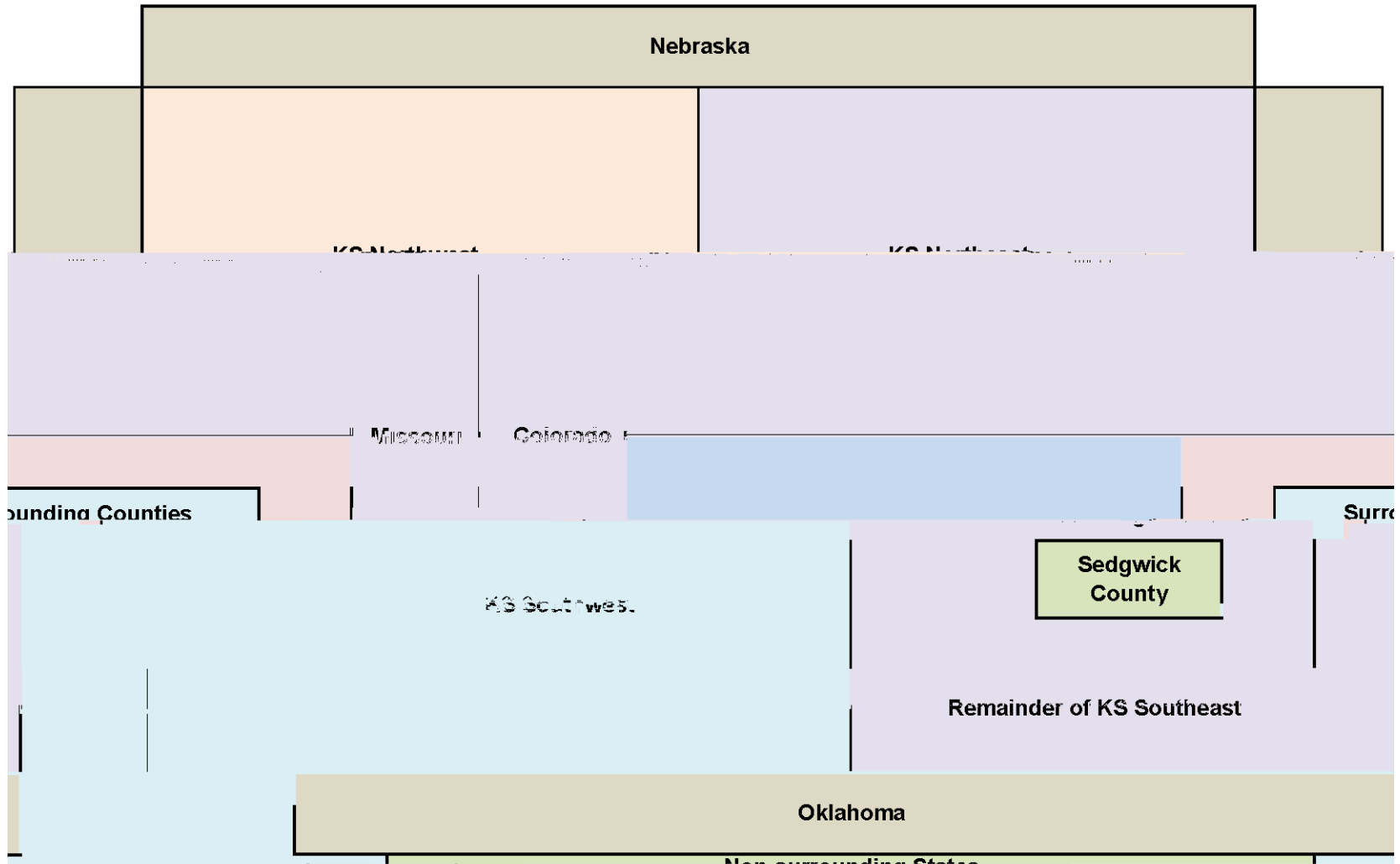
- Identifying high yield institutions and geographic areas

- Classification/segmentation propensity models



# Modeling & Scoring

## *WSU Kansas Area Map:*





# Modeling & Scoring

## *RTAP Recruit-to-applicant-probability:*

RTAP scores range from 0 to 99.99 and are read as a percentage likelihood of a recruit becoming an applicant. Scores are refreshed & uploaded to Banner (SORTEST) daily.

term	sex	raceth	mcg_div	mcg_undecided	primary_source18	kansas_map	RTAP
201310	F	w hite non hispanic	LAS Other	undecided majr	UG tape list loads	KS (northeast)	6.75
201310	F	missing	LAS Other	undecided majr	UG process update inquiry	KS (northeast)	72.76
201310		missing	Education	decided majr	UG programming update	KS MSA w o Sedg	0.82
201310	M	w hite non hispanic	Engine2 0 Td	[(d-geg 0 Td [(dec-56(i)29(ded m)95(aj)29(r)]TJ	7.636 0 Td	[(U)75(G)40( pr)-42(ogr)-42(am)95(	

# Modeling & Scoring

## *Comparison of Modeling Performance:*

Predicting Student Recruit-to-Applicant Probability (RTAP scores)

Area Under the Curve		95% Confidence Interval				
Model scores:	Gain	Area	Std.Er	Sig.	Lower	Upper Bound
IBM SPSS RTAP	43%	.936	.002	.000	.931	.942
Rapid Insights	31%	.817	.005	.000	.806	.827
Noel Levitz	20%	.714	.006	.000	.702	.726

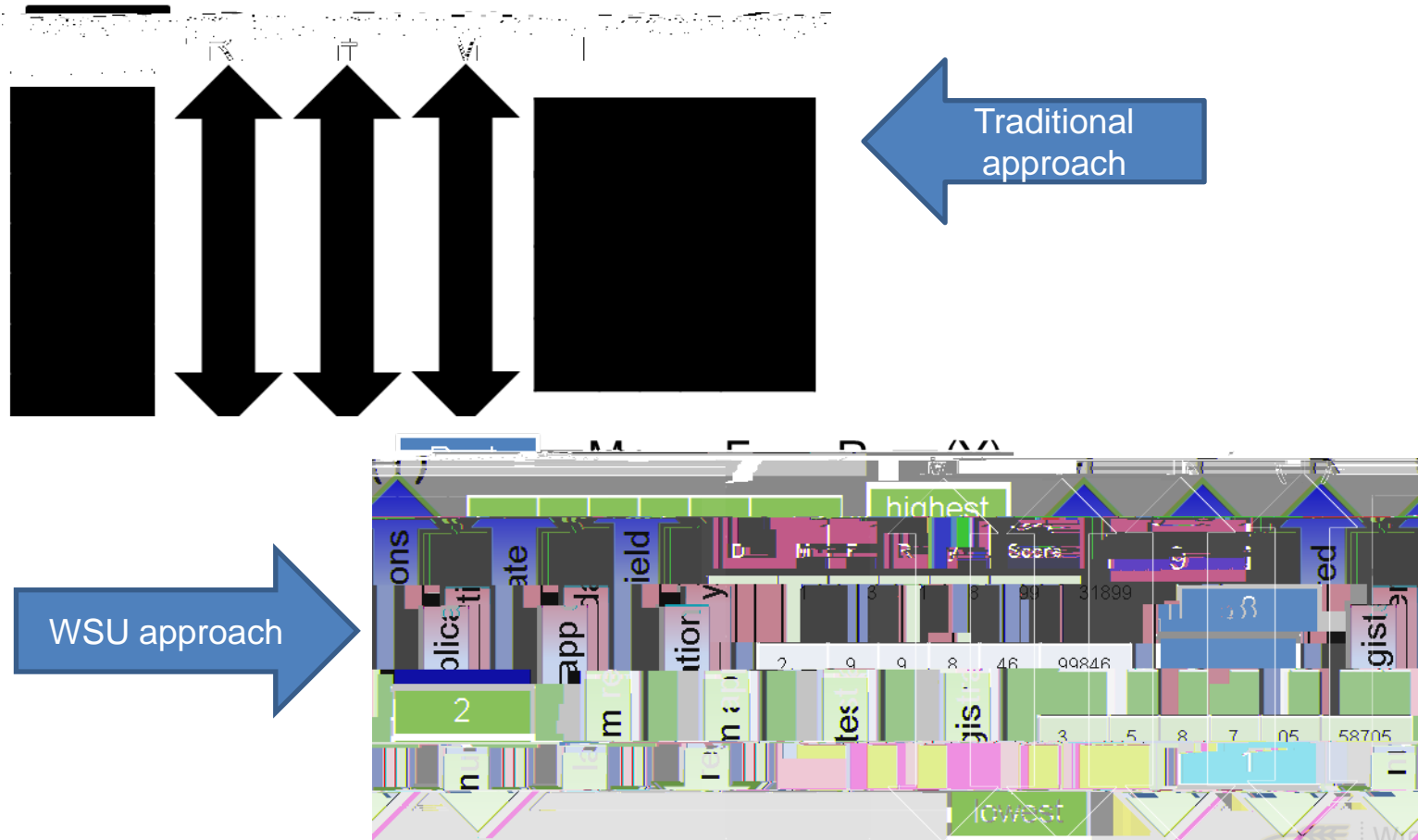


# Modeling & Scoring

## *Structural-level:*

Institutional/geographic focus ranked on yield

RFM analysis





# Modeling & Scoring

## Structural-level:

term	sex	raceth	mcg_div	mcg_undecided	primary_source18	kansas_map	RTAP	MFry	MFry rank (10=high)
201310	F	w hite non hispanic	LAS Other	undecided majr	UG tape list loads	KS (northeast)	6.75	58805	6
201310	F	missing	LAS Other	undecided majr	UG process update inquiry	KS (northeast)	72.76	88539	9
201310		missing	Education	decided majr	UG programming update	KS MSA w o Sedg	0.82	99945	10
201310	M	w hite non hispanic	Engineering	decided majr	UG process update inquiry	KS MSA w o Sedg	95.71	99860	10
201310	F	w hite non hispanic	Fine Arts	decided majr	UG direct inquiry	non surrounding states	16.23	34133	4
201310	F	w hite non hispanic	Education	decided majr	UG direct inquiry	Oklahoma	11.77	15300	2
201310	M	w hite non hispanic	LAS Social Sciences	decided majr	UG off campus recruit prg	KS Segdw ick	21.54	99955	10
201310	F	missing	LAS Other	decided majr	UG off campus recruit prg	KS Segdw ick	22.44	99955	10
201310	F	black non hispanic	LAS Nat Sci and Math	decided majr	UG process update inquiry	non surrounding states	89.78	78531	8
201310	F	multiple race non hispanic	Health Professions	decided majr	UG process update inquiry	KS (southw est)	89.09	99846	10
201310	F	black non hispanic	Education	undecided majr	UG visit	KS Segdw ick	20.81	99945	10
201310	M	w hite non hispanic	Fine Arts	decided majr	UG process update inquiry	KS (northeast)	90.88	77536	8
201310	M	missing	LAS Other	decided majr	UG Referral	non surrounding states	7.95	88847	9
201310	F	w hite non hispanic	Health Professions	decided majr	UG process update inquiry	KS Segdw ick	98.48	99937	10
201310		missing	Engineering	decided majr	UG programming update	KS (southeast exc MSA & Sedg)	0.56	35625	4
201310	M	missing	Engineering	undecided majr	UG process update inquiry	KS Segdw ick	97.46	99860	10
201310		missing	LAS Other	undecided majr	UG programming update	KS Segdw ick	1.03	31899	3
201310	M	w hite non hispanic	Engineering	undecided majr	UG process update inquiry	Nebraska	80.89	34533	4
201310	M	hispanic	Engineering	decided majr	UG direct inquiry	Colorado	16.12	78531	8
201310	M	black non hispanic	Engineering	decided majr	UG direct inquiry	non surrounding states	18.89	31199	3
201310	M	missing	Engineering	decided majr	UG direct inquiry	KS (southeast exc MSA & Sedg)	15.67	34533	4
201310	M	w hite non hispanic	LAS Other	undecided majr	UG tape list loads	KS Segdw ick	33.38	78531	8
201310	N	missing	Business	decided majr	UG on campus recruit prg	KS Segdw ick	1.04	88847	9
201310	F	black non hispanic	Health Professions	decided majr	UG on campus recruit prg	KS Segdw ick	50.22	99922	10

# Modeling & Scoring

## *Identifying at-risk students:*

### Incoming

INCS (HS Senior academic ability score)

APAP (Applicant probability to be on academic probation 1<sup>st</sup> year of enrollment)

Remedial education need

### In process

Basic skills completion status

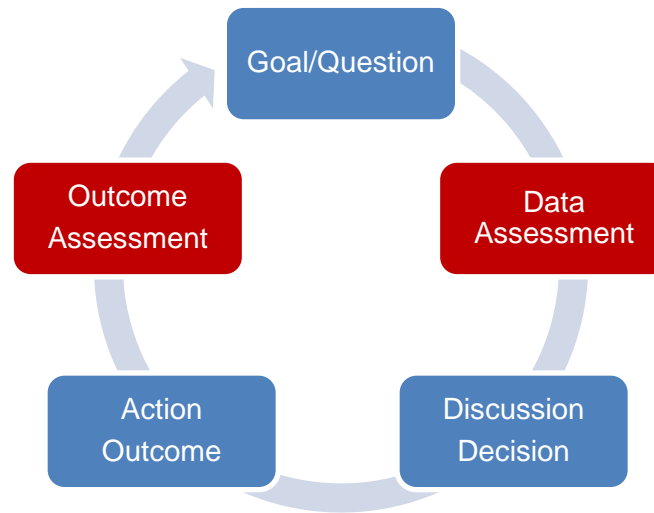
High D/F grade courses registration

Current Academic status (e.g., gpa, probation)

Academic history status (e.g., <gpa,<hrs,<terms)

Financials

# Monitoring Performance

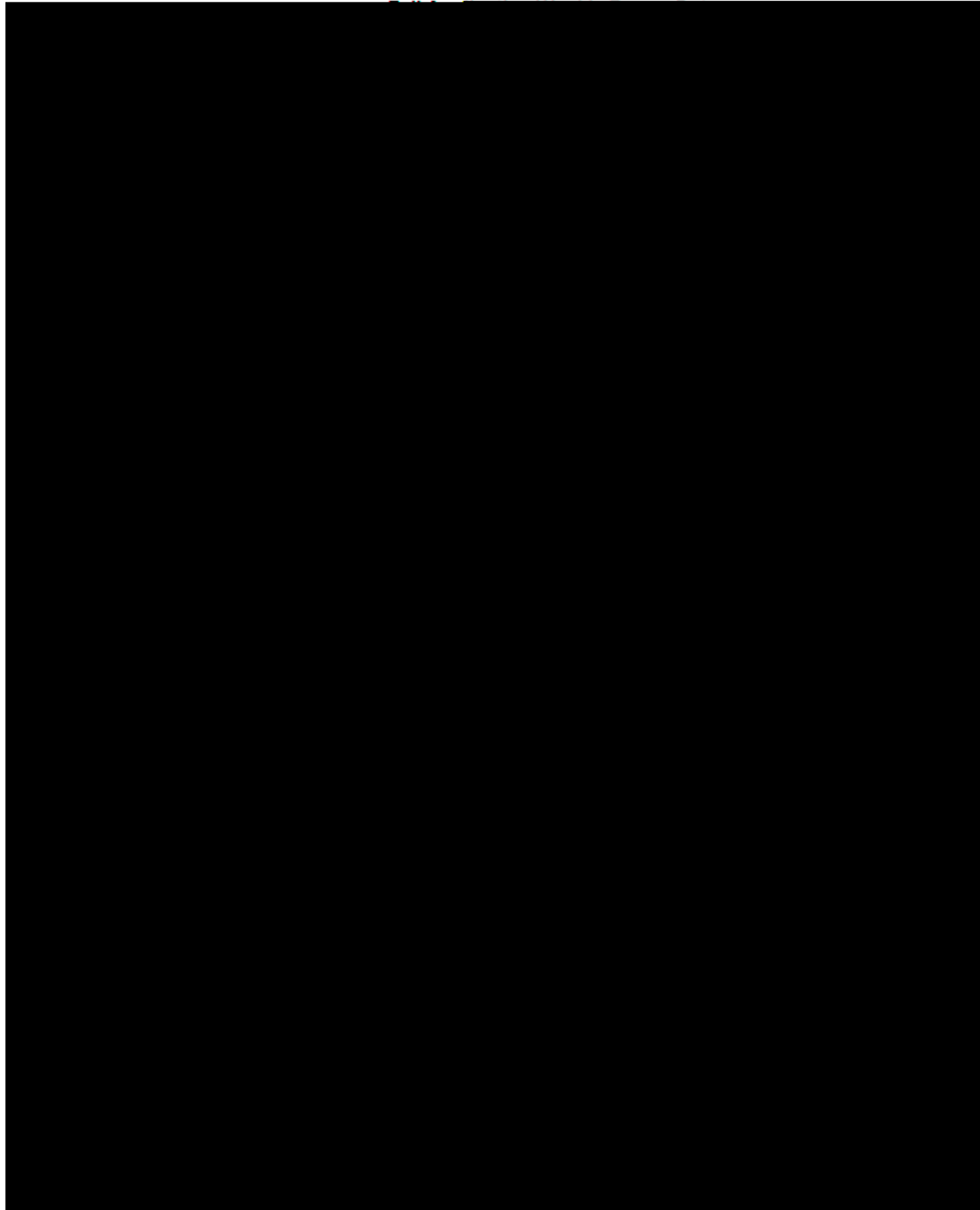


Weekly tri-semester report

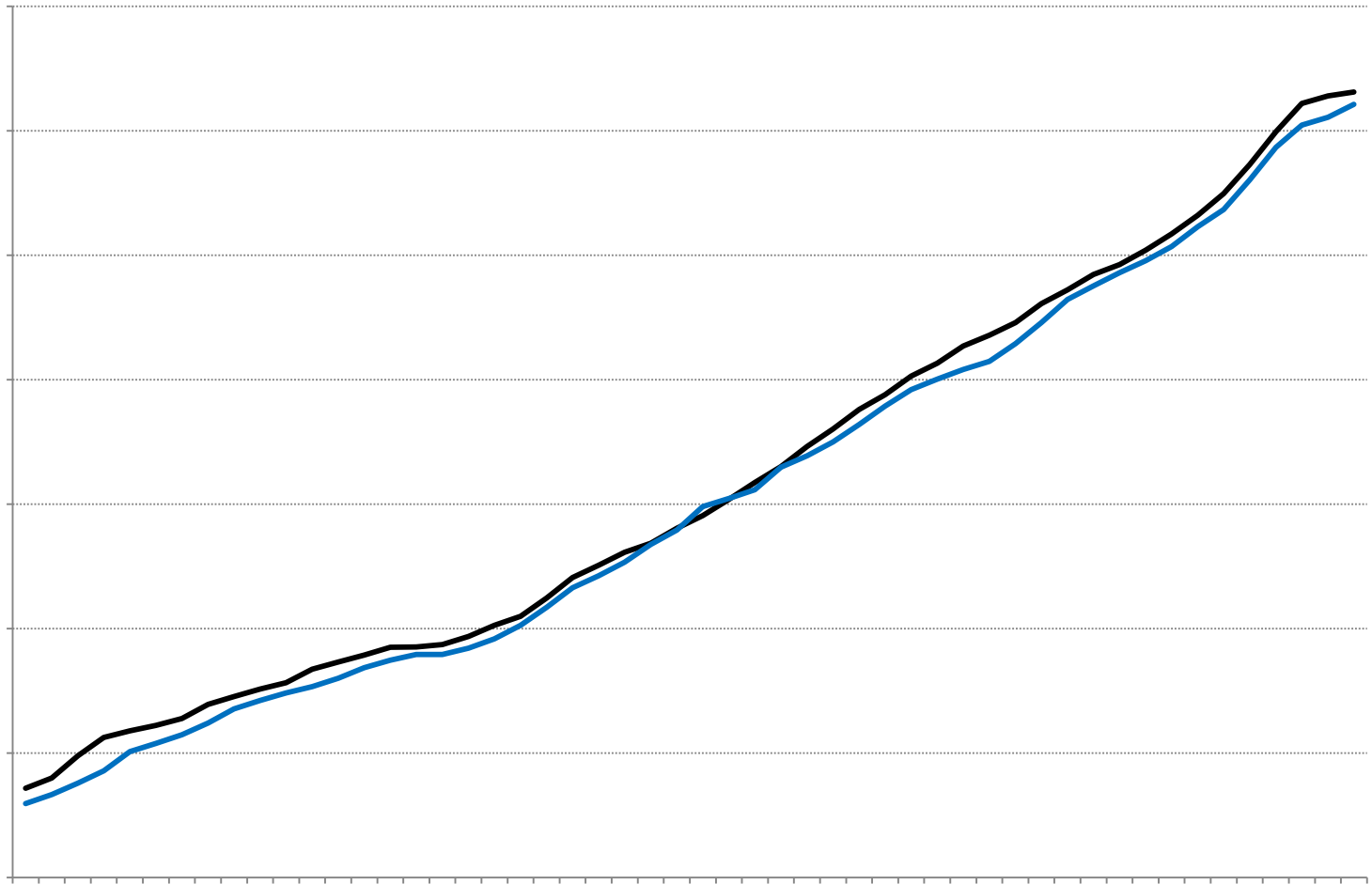
Forecasting

Feeder reports

Data audits







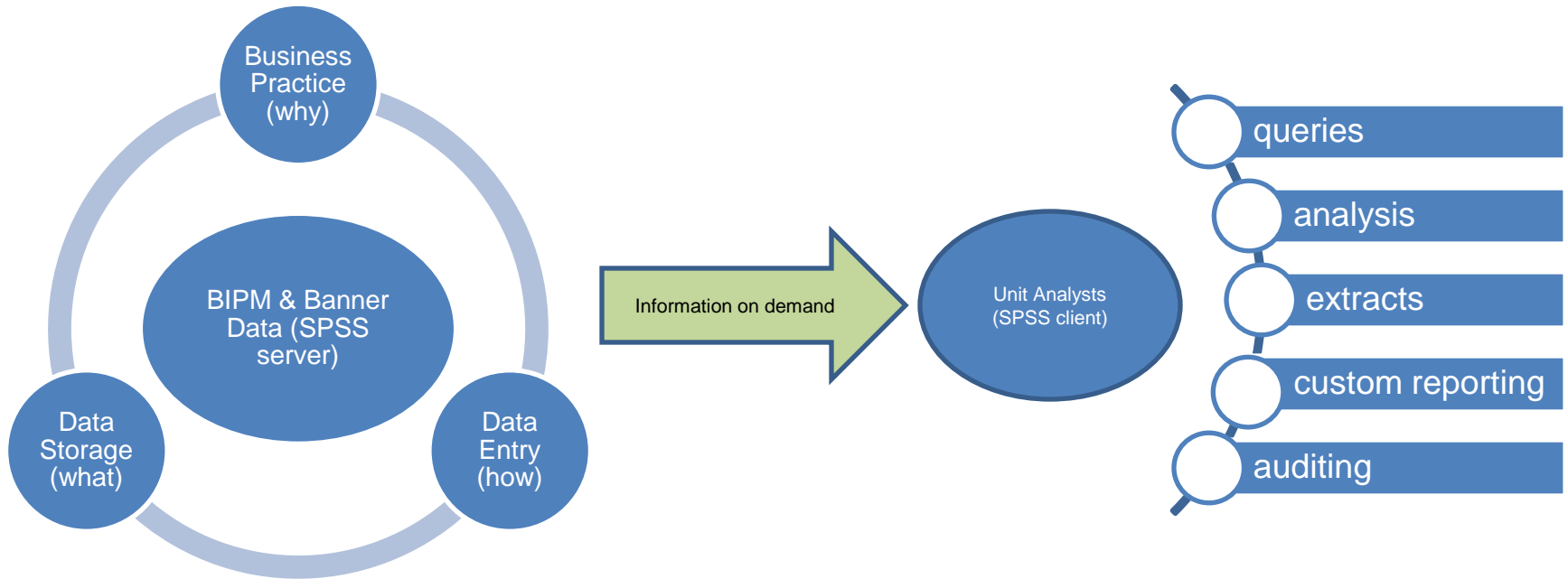
# Feeder Reports:

Table 1: Application Counts for Fall Admission of HS Feeders

Week 20 (01/29/2012) HS Feeder:	Undergraduate Admissions SR Application Population Freshmen (International Undergraduate and Graduate Admissions excluded)																															
	All applications								Admitted								Denied								In Process							
	2009	2010	2011	2012	diff	pct chg	2009	2010	2011	2012	pct reg	diff	pct chg	2009	2010	2011	2012	diff	pct chg	2009	2010	2011	2012	diff	pct chg	2009	2010	2011	2012	diff	pct chg	
total	1,581	1,508	1,605	1,906	301	18.8%	1,134	1,183	1,297	1,527		230	17.7%	18	20	14	13	-1	-7.1%	429	305	294	366	72	24.5%							
Andale H S	22	28	32	28	-4	-12.5%	18	24	23	22	0%	-1	-4.3%	0	0	0	0	0	n/a	4	4	9	6	-3	-33.3%							
Andover Central High School	35	38	49	46	-3	-6.1%	27	31	42	40	0%	-2	-4.8%	1	0	0	0	0	n/a	7	7	7	6	-1	-14.3%							
Andover H S	38	34	44	55	11	25.0%	33	26	41	47	0%	6	14.6%	0	0	0	1	1	n/a	5	8	3	7	4	133.3%							
Augusta H S	13	6	17	10	-7	-41.2%	11	6	16	8	0%	-8	-50.0%	0	0	0	0	0	n/a	2	0	1	2	1	100.0%							
Bishop Carroll H S	87	102	81	98	17	21.0%	68	87	76	84	0%	8	10.5%	1	4	0	1	1	n/a	18	11	5	13	8	160.0%							
Campus H S	86	75	92	90	-2	-2.2%	70	66	76	74	0%	-2	-2.6%	0	1	1	0	-1	-100.0%	16	8	15	16	1	6.7%							
Cheney H S	11	8	17	17	0	0.0%	6	7	13	12	0%	-1	-7.7%	0	0	0	0	0	n/a	5	1	4	5	1	25.0%							
Circle H S	9	13	7	12	5	71.4%	6	10	7	11	0%	4	57.1%	0	1	0	0	0	n/a	3	2	0	1	1	n/a							
Clearwater H S	9	16	11	22	11	100.0%	7	12	9	14	0%	5	55.6%	0	0	0	0	0	n/a	2	4	2	8	6	300.0%							
Derby H S	101	91	79	113	34	43.0%	72	71	63	76	0%	13	20.6%	1	1	0	1	1	n/a	28	19	16	36	20	125.0%							
Garden Plain H S	41	32	10	18	8	80.0%	23	21	6	11	0%	5	83.3%	0	1	0	1	1	n/a	18	10	4	6	2	50.0%							
Goddard H S	162	147	156	146	-10	-6.4%	126	121	141	128	0%	-13	-9.2%	4	2	0	3	3	n/a	32	24	15	15	0	0.0%							
Goddard Eisenhower H S	0	0	0	0	0	0%	0	0	0	0	0%	0	0%	0	0	0	0	0	n/a	0	0	0	0	0	0%							
Independent H S	18	11	9	21	14	7	7	0%	0	0.0%	0	0	0	0	0	0	0	n/a	3	4	4	2	-2	-50.0%								
Maize HS	152	144	112	140	28	25.0%																										
Maize South	0	0	26	39	13	50.0%																										
Mulvane H S	24	17	28	22	-6	-21.4%																										
Newton H S	32	28	19	31	12	63.2%																										
Rose Hill H S	13	17	18	19	1	5.8%																										
Sedgwick H S	4	5	5	8	3	60.0%																										
Summit Christian Academy	9	11	12	8	-4	-33.3%																										
Trinity Academy	62	48	64	78	14	21.9%																										
Wichita Collegiate H S	18	23	24	30	6	25.0%																										
Wichita Heights H S	92	68	92	96	4	4.3%																										
Wichita East H S	84	89	86	125	39	45.3%																										
Wichita North H S	59	68	64	85	21	32.8%																										
Wichita Northwest H S	85	99	112	107	-5	-4.5%																										
Wichita South H S	51	57	66	74	8	12.1%																										
Wichita Northeast Magnet H S	47	44	51	86	35	68.6%																										

# Auditing:

	adm_office		SARADAP_PIDM	SPRIDEN_ID	SARADAP_TERM_CODE_ENTRY	SARADAP_APPL_NO	SARADAP_APPL_DATE	SARADAP_APST_CODE	SARADAP_ADMT_CODE	SARADAP_STYP_CODE	SARADAP_RECR_CODE	adm_dec_grp5	adm_decision	SARAPPD_APDC_CODE1	sarappd_officet	SARRSRC_SBG1_CODE1	SARRSRC_SBG1_CODE2	saraatt_attributes	GORVISA_VTYP_CODE	SARADAP_RESD_CODE	SGBSTDN_RESD_CODE	SPBPERS_SEX		SPBPERS_BIRTH_DATE	age_app	sordegr_trf_gpa	sordegr_GR60hr_gpa	SORHSCH_GPA1	SORHSCH_GPA2	SORHSCH_GPA3	SORHSCH_GRADUATION_DATE1	SORHSCH_SEGI_CODE1
IE	IE missing primary source code	#####	#####	201230	2	1/19/2012	I	IU	0		8	ZY	IE					F1	F		M		3/2/1989	23								
IE	IE missing primary source code	#####	#####	201310	2	12/5/2011	I	IU	2	DJH	8	ZY	IE					F1	F		M		10/5/1988	23								
UG	multiple high school codes	#####	#####	201310	1	2/9/2012	I	SR	1		8	ZY	UG	APO						0	F		2/4/1994	18						6/1/2012	H998	
UG	saradap_admt_code wrong for saradap_styp	#####	#####	201310	2	2/9/2012	I	TR	3	FY	8	ZY	UG	APW				PR	R		M		8/25/1993	18	4	3.214			6/1/2011	H100		



# Operations processing in Admissions

# Admission Data & Reporting Needs

## Pre-BIPM/SPSS

Banner delivered reports

- Not defined by WSU business practices
- Inconsistent data results with production

Dependent upon & burden to others

Admission working group for BIPM data design

UG, IE, GR business practice infused table design

Source/design transparency & instant modifications

Data integrity

Information on demand via SPSS

No dependencies, burdens or delays

Flexibility (custom reports & lists, audits, queries, analysis, Banner & BIPM data extracts)

# Use of SPSS for Banner verification

Banner Relationship Management (BRM)

Consistent need to verify BRM

Use of SPSS & BIPM data to audit BRM

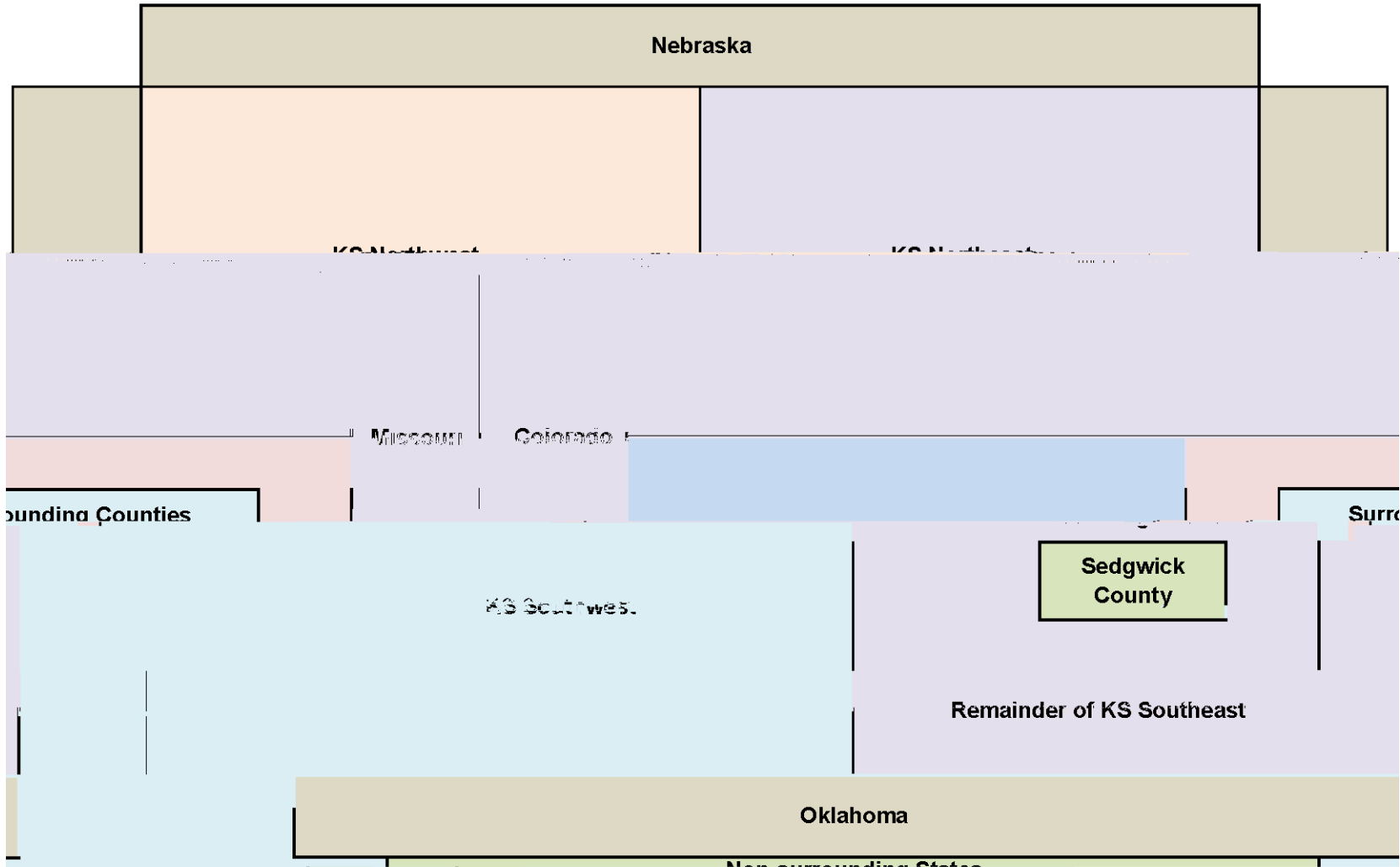
# Geographic Focus

Greater understanding of where our students come from



# Modeling & Scoring

## *WSU Kansas Area Map:*



# Geographic Focus

Greater understanding of where our students come from

Utilize MFR rankings

- Identify areas of high ROI students

- Identify areas for future growth

# MFR Rankings of Feeder Schools & Locations:

HS (SR) Feeders	mfr	rank
Maize HS	999.42	10
Wichita Northw est H S	998.46	10
Goddard H S	995.29	10
Wichita East H S	889.44	9
Bishop Carroll H S	887.43	9
Wichita North H S	875.56	9
Wichita Heights H S	873.51	9
Wichita Southeast H S	871.57	8
Derby H S	788.37	8
Campus H S	782.33	8
Wichita South H S	768.52	7
Kapaun Mt Carmel H S	674.37	7
Wichita Northeast Magnet H S	666.43	7
Valley Center H S	663.27	7
Andover H S	658.46	6
Andover Central High School	653.37	6
New ton H S	554.44	6
Andale H S	554.40	5
Wichita West H S	547.64	5
Trinity Academy	465.18	5
Mulvane H S	445.47	5
Augusta H S	432.49	4
Sunrise Christian Academy	422.54	4
Maize South	347.30	4
Independent H S	339.35	3
Rose Hill H S	336.38	3
Circle H S	324.39	3
Garden Plain H S	246.22	3
Cheney H S	237.30	2
Wichita Collegiate H S	223.35	2
Clearw ater H S	222.34	2
Goddard Eisenhow er HS	116.00	1
Hesston H S	111.40	1
Sedgw ick H S	111.39	1



# Processing of Matriculation Scoring for Targeted Recruitment

Past scoring processes were mostly manual

BIPM/SPSS RTAP scoring

Model scoring

- Refreshed daily
- Uploaded into Banner (SORTEST) daily
- Greater yield, control, & flexibility

Automation

- Mailings (e.g., invitations, letters)
- Which high schools to visit
- Which college fairs to attend

# Functional Usage of Data

Dashboard for performance

Points of interest for senior staff & administration

# Strategic Planning & Execution

Measurement tool with precision

Program, publication planning

Performance agreements

Resource allocation

Changes in college-

