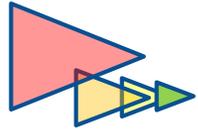


Business Intelligence and Data Warehousing Technology Implementation

Reddy Gurram, IT Division Chief

Business Intelligence



Data Driven Decisions

- ▶ Sacramento embraced a collection of new business intelligence technologies and innovations to improve program management with data supported decisions.
 - ▶ **DASHBOARDS**- real time operational awareness of call centers and lobbies
 - ▶ **INTERACTIVE REPORTING**- rapidly available reporting with filters, slicers and drill downs to detailed records
- ▶ Business Intelligence is a tool set that can be used to provide relevant information in both real time and historical context.
- ▶ An example of Business Intelligence

Data Rich... Information Poor

Too often, organizations are data rich and information poor due to their data residing in disconnected systems.

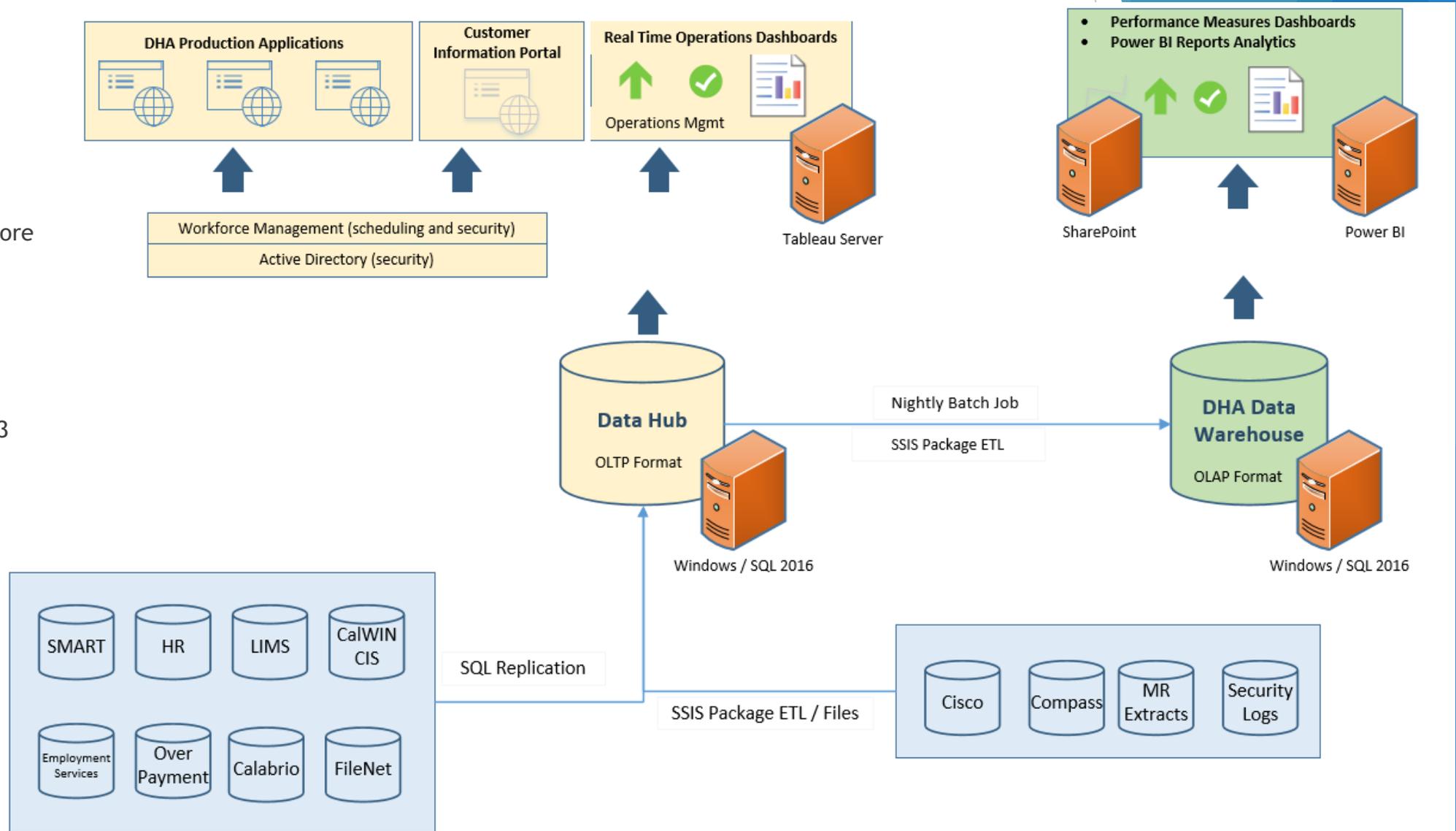
The adoption of a data warehouse and integrated analytics platforms like dashboards and data portals helped Sacramento County overcome this challenge.

What makes Sacramento's BI possible?

- ▶ **DataHub** - A collection of real time (or near real time) data made available to applications and reports for operations level use. Data is merged from disconnected systems to produce relevant datasets.
 - ▶ Example: *Number of calls in progress that are conduction live phone appointments. Who is performing the call, how long is the call and what is the call status.*
- ▶ **Data Warehouse** -Aggregated data from disconnected systems transformed for detailed analysis and reporting. Maintains historical context of activity to track changes over time.
 - ▶ Example: Identify customers that have visited lobby locations immediately after missing phone appointments rather than calling to reschedule the appointment.
- ▶ **Server Infrastructure that can deliver real time visualizations and reports**
 - ▶ SQL Server 2016
 - ▶ Tableau
 - ▶ Power BI

Architecture

- ▶ SQL Server 2016
Physical Server, 16 core
- ▶ Tableau v10.5
- ▶ Power BI Server v5/2018
2 VMs, 8 core each
- ▶ SharePoint
(PerformancePoint) v2013



Performance Measures

- ▶ SharePoint
 - ▶ Performance Point
- ▶ Scorecard Format
 - ▶ Historical records
 - ▶ Drill down to details
 - ▶ All DHA Program Measures
 - ▶ State/Federal Measures (WPR)
 - ▶ DHA Administration
 - ▶ Internal Investigations

Building Bridges to Better Futures

Harpster, Joshua ▾ ?

SHARE FOLLOW □

Performance Measures - Staging > DHA Performance Dashboard - Staging

Home DHA Performance Measures v2 ▾ Human Resource Operations Management ▾

Medi-Cal Assistance Program

	Status	Actual	Trend	Target	Red-Line	Data Period	Details
Medi-Cal applications processed <= 45 days	🟡	93.6%	⬇️	95%	90%	Nov '15	Details
Avg. days to complete intake (excluding CMISP & DED)	🟢	25.3	➡️	35	45	Nov '15	Details
Avg. days to complete CMISP intake (excluding DED)	🟢	22.4	⬇️	35	45	Nov '15	Details
Renewals processed <= 60 days	🔴	87.1%	➡️	95%	90%	Nov '15	Details

CalWORKs

	Status	Actual	Trend	Target	Red-Line	Data Period	Details
Immediate need determined within 1 day	🟢	97.2%	➡️	96%	90%	Jan '16	Details
Average days to determination of intake	🟢	7.0	⬇️	10	15	Nov '15	Details
Applications processed within 45 days	🟢	98.2%	➡️	95%	90%	Nov '15	Details

CalFresh

	Status	Actual	Trend	Target	Red-Line	Data Period	Details
ES granted within required 3-day time frame	🟢	98.1%	➡️	97%	90%	Jan '16	Details
Avg calendar days to disposition	🟢	9.4	➡️	14	17	Dec '15	Details
Applications disposition <= 30 days	🟢	98.5%	➡️	95%	90%	Dec '15	Details
CalFresh FFY cumulative error rate	🟢	0.00%	⬇️	4%	5%	Feb '15	Details

Medi-Cal/CalFresh Service Center

	Status	Actual	Trend	Target	Red-Line	Data Period	Details
All Incoming Calls - Average Speed of Answer Calls	🔴	00:02:20	⬆️	00:01:00	00:02:00	Jan '16	Details

Employment Services

	Status	Actual	Trend	Target	Red-Line	Data Period	Details
Count of clients who gained employment (monthly)	🟢	601	⬇️	305	275	Sep '15	Details
Clients no longer in receipt of CalWORKs after 90 days of employment	🟢	41.3%	➡️	25%	20%	Dec '15	Details
Federal WPR (FFY 2015)	🟢	51.5%	⬆️	50%	45%	Sep '15	Details

Federal WPR - Year/Month Comparison

	Previous	Latest	Status
Federal WPR - Data Period	Sep '14	Sep '15	
Federal WPR - Value	46.8%	51.5%	⬆️

Stage One Child Care

	Status	Average	Trend	Target	Red-Line	Data Period	Details
Avg Days to Process Paid Claims(CCPU to DOF)	🟢	18.0	⬆️	20	24	Jan '16	Details

General Services

	Status	Actual	Trend	Target	Red-Line	Data Period	Details
Positive response to 6 Customer Satisfaction Questions	🟡	85.4%	⬇️	90%	85%	Jul-Dec '14	Details

Notes

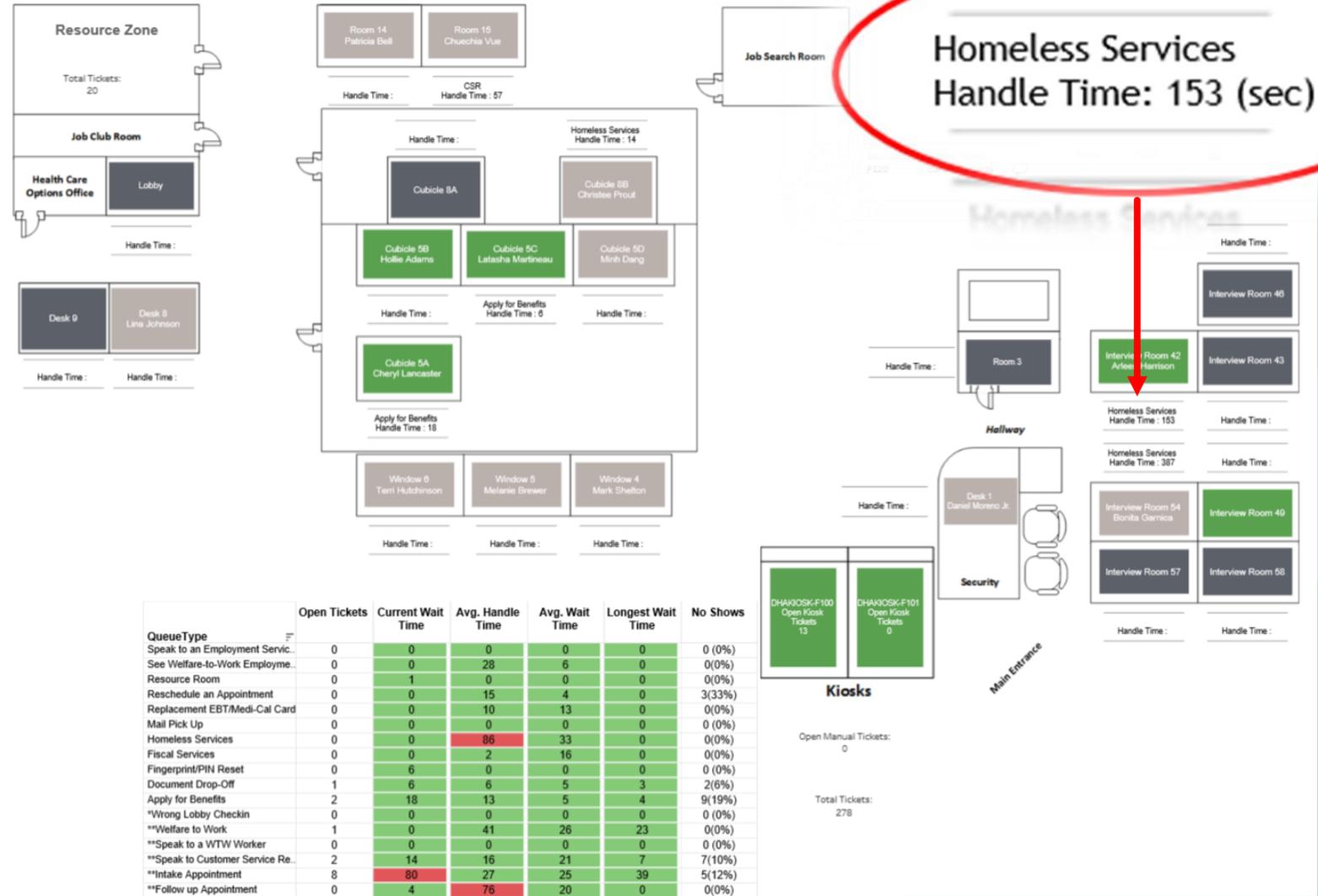
Please edit this page to add your comments

Performance Measures - Scorecard (Queue Items)

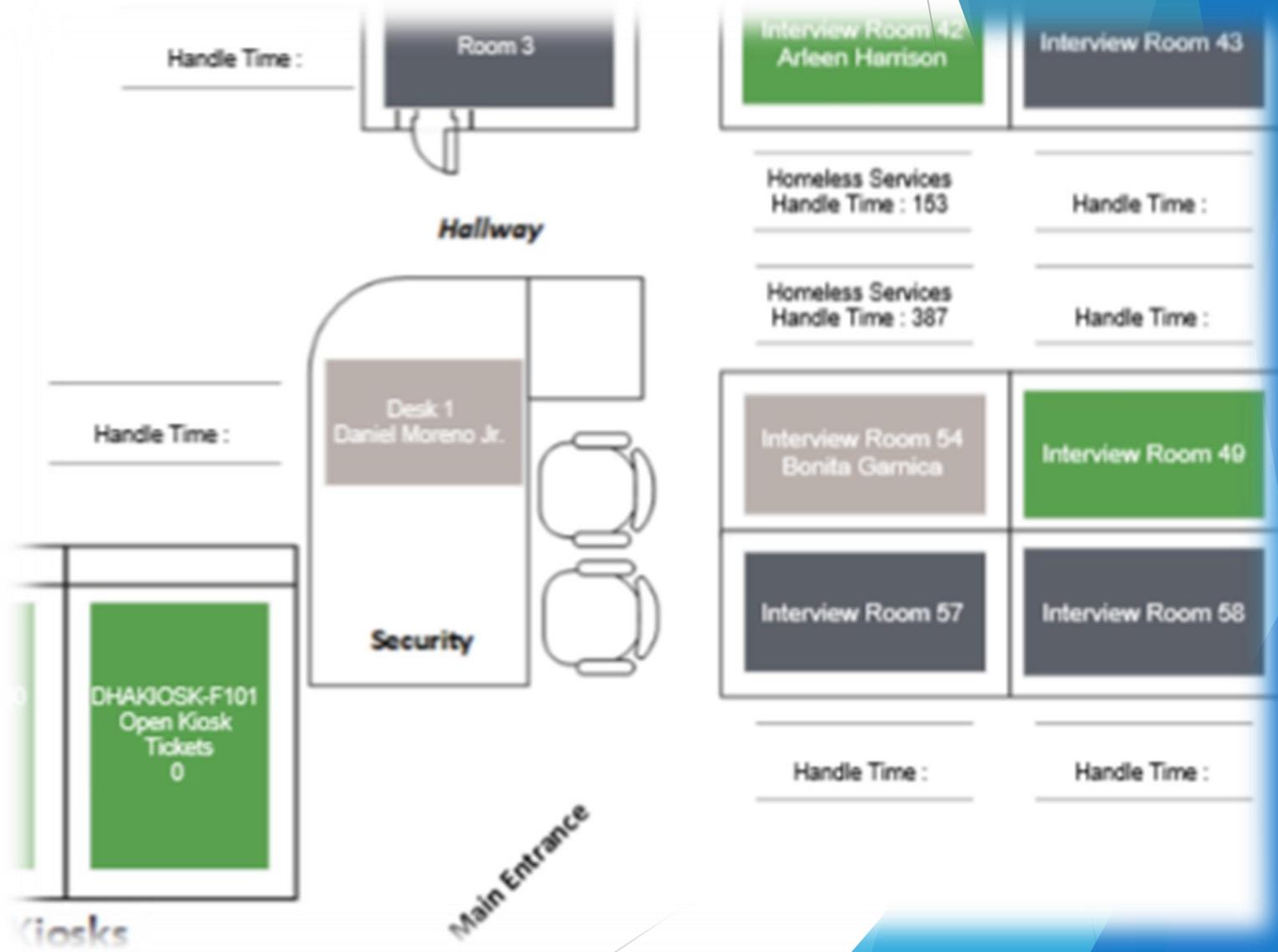
	Total	Processed	Staff Ratio	Avg Handle Time	Status	Avg Wait Time	Status	Avg Overall	Status
▲ Queue Items	2,344	2,341	111.48	15	●	330	◆	24	●
Apply for Benefits	408	408	34.00	23	●	11	●	34	●
Document Drop-Off	708	708	54.46	10	●	8	●	18	●
Fingerprint/PIN Reset	18	18	3.60	29	◆	17	▲	46	◆
Fiscal Services	2	2	2.00	4	●	10	●	15	●
Follow up Appointment	3	3	1.50	28	●	11	●	39	●
Homeless Services	43	43	3.91	35	▲	25	▲	59	▲
Mail Pick Up	1	1	1.00	3	●	6	●	9	●
Replacement EBT/Medi-Cal Card	211	211	19.18	8	●	9	●	17	●
Reschedule an Appointment	15	15	3.00	22	◆	7	●	29	●
Resource Room	1	1	1.00	0	●	2	●	2	●
See Welfare-to-Work Employment Advisor	48	48	6.86	7	●	18	●	25	●
Speak to an Employment Services Worker	7	7	1.75	12	●	22	●	33	●
Speak to Customer Service Representative	807	806	67.17	13	●	338	◆	19	●
Welfare to Work	4	4	2.00	2	●	44	◆	46	●

Real Time Operations Management Lobby Dashboard

- ▶ Real Time
- ▶ Tableau
- ▶ Visual layout of each lobby
- ▶ Predicted Wait Times
- ▶ Lobby Kiosk Check Ins
- ▶ Appointments
- ▶ Window status
- ▶ Service Time
- ▶ Non-Active resources
- ▶ Averages and Thresholds
- ▶ Wrong Lobby Alerts



Lobby Dashboards - Unique version for each lobby



Real Time Operations Management Service Center Dashboard

- ▶ Real Time
- ▶ Tableau
- ▶ Call Queue status
- ▶ Number of Calls Waiting
- ▶ Wait Times
- ▶ Handle/Talk Times
- ▶ Call Center Agent status

- Calls
- Appointments
- Schedule
- Assigned Tasks
- Unassigned Tasks

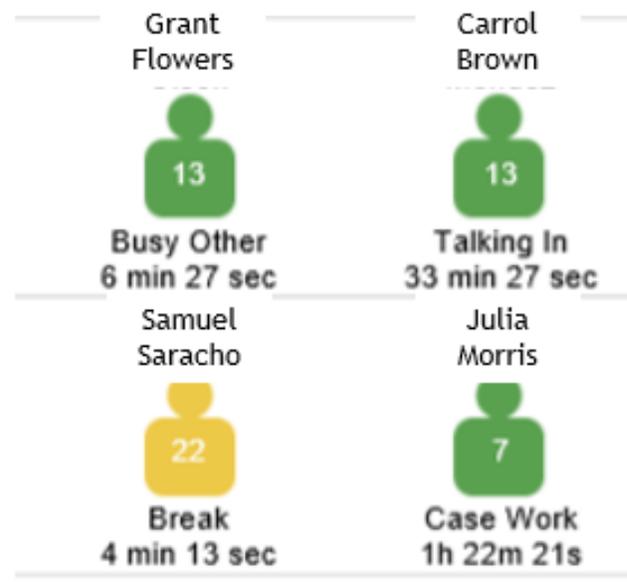
Color Group	Language	Calls Waiting In Q	Longest Call Waiting In Q	Not Ready Scheduled	RONA	Ready
28th GI	English	3	2	0	0	0
28th Rescheduled	English	0	0	0	0	0
Blue	English	0	0	7	0	21
	Russian	0	0	2	0	0
	Spanish	0	0	1	0	4
E Comm Rescheduled	English	0	0	0	0	1
Gold	English	0	0	2	0	6
	Spanish	0	0	0	0	1
Grey	English	0	0	0	0	0
Pink	English	0	0	0	0	1
Silver	English	0	0	2	0	6
	Russian	0	0	0	0	0
	Spanish	0	0	0	0	1
Teal	English	0	0	0	0	2
Yellow	English	2	7	3	0	0
	Spanish	0	0	1	0	0

- Color
- (All)
 - Blue
 - Gray
 - Red
 - Yellow
 - Green

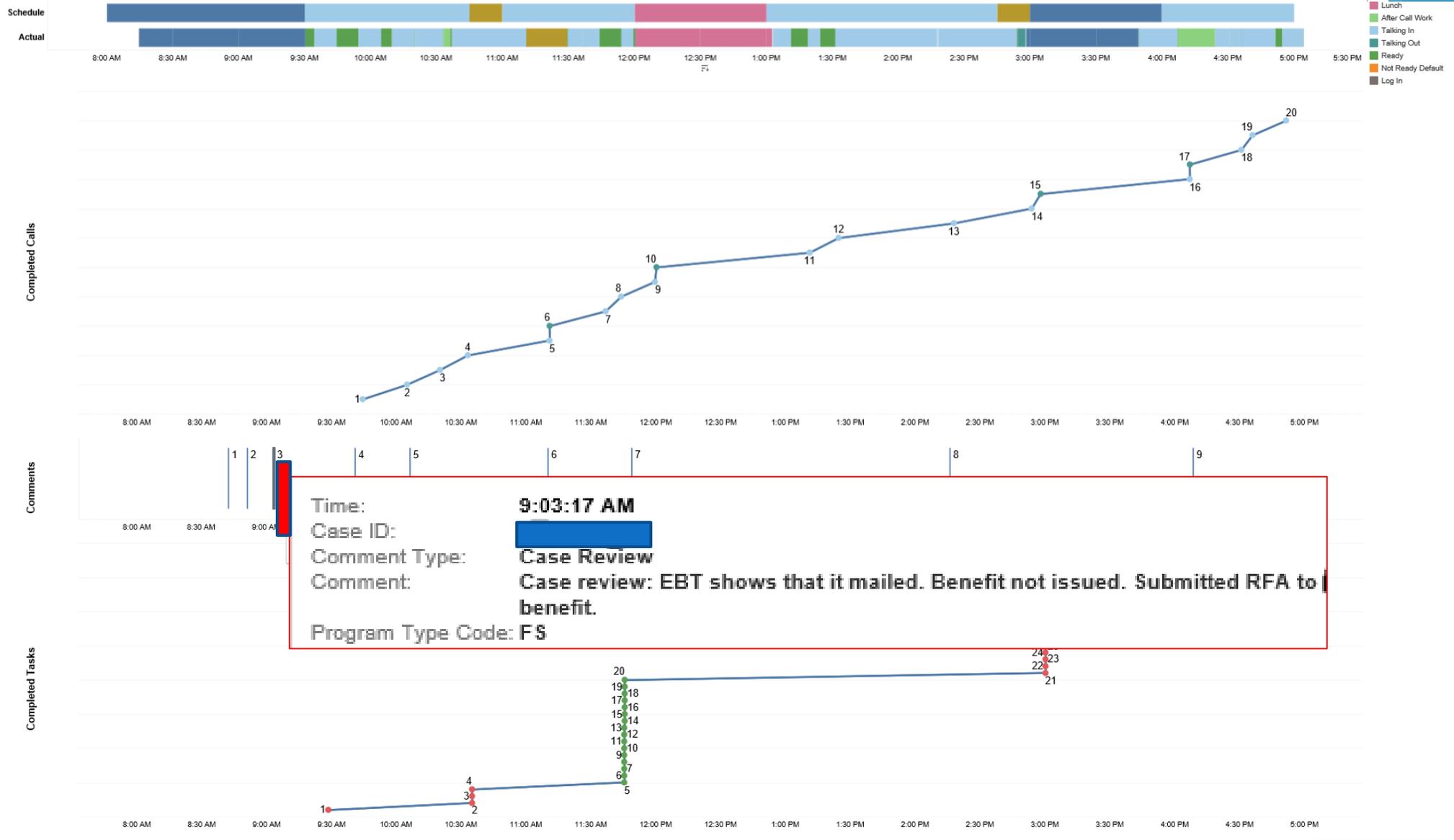
	Ashley Arnold	Carmen Briscoe	Deborah Burch	Melissa Glover	Roselee Ramirez
Chesnokov	Case Work 13 min 51 sec	Case Work 3 min 31 sec	Talking In 5 min 41 sec	Talking In 1 min 43 sec	Case Work 31 min 9 sec
Angelica Rivas	17 Talking Out 1 min 45 sec	16 Case Work 40 min 47 sec	7 Ready 5 min 55 sec	28 Ready 8 min 33 sec	13 Talking In 3 min 9 sec
Anna Morales	0 Case Work 27 min 17 sec	13 Busy Other 6 min 27 sec	13 Talking In 33 min 27 sec	8 Login, not ready 52 min 7 sec	10 Talking Out 12 min 21 sec
Anthony Santos	6 After Call Work 3 min 13 sec	22 Break 4 min 13 sec	7 Case Work 1h 22m 21s	9 Talking In 1h 1m 51s	7 Talking In 2 min 11 sec
Bao Tang	0 Angel Atilano	6 Cassie Thao	0 Diana Riggs	0 Hilary Egan	0 Jatwan Walston
				1 Keisha Raven	24 Lavonna Brown
					8 Lorenzo Trujillo
					9 Mercy Xiong

Service Center Dashboard - Real time statuses

Color Group	Language	Calls Waiting In Q	Longest Call Waiting In Q	Not Ready Sct
28th GI	English	3	2	0
28th Rescheduled	English	0	0	0
Blue	English	0	0	7
	Russian	0	0	2
	Spanish	0	0	1

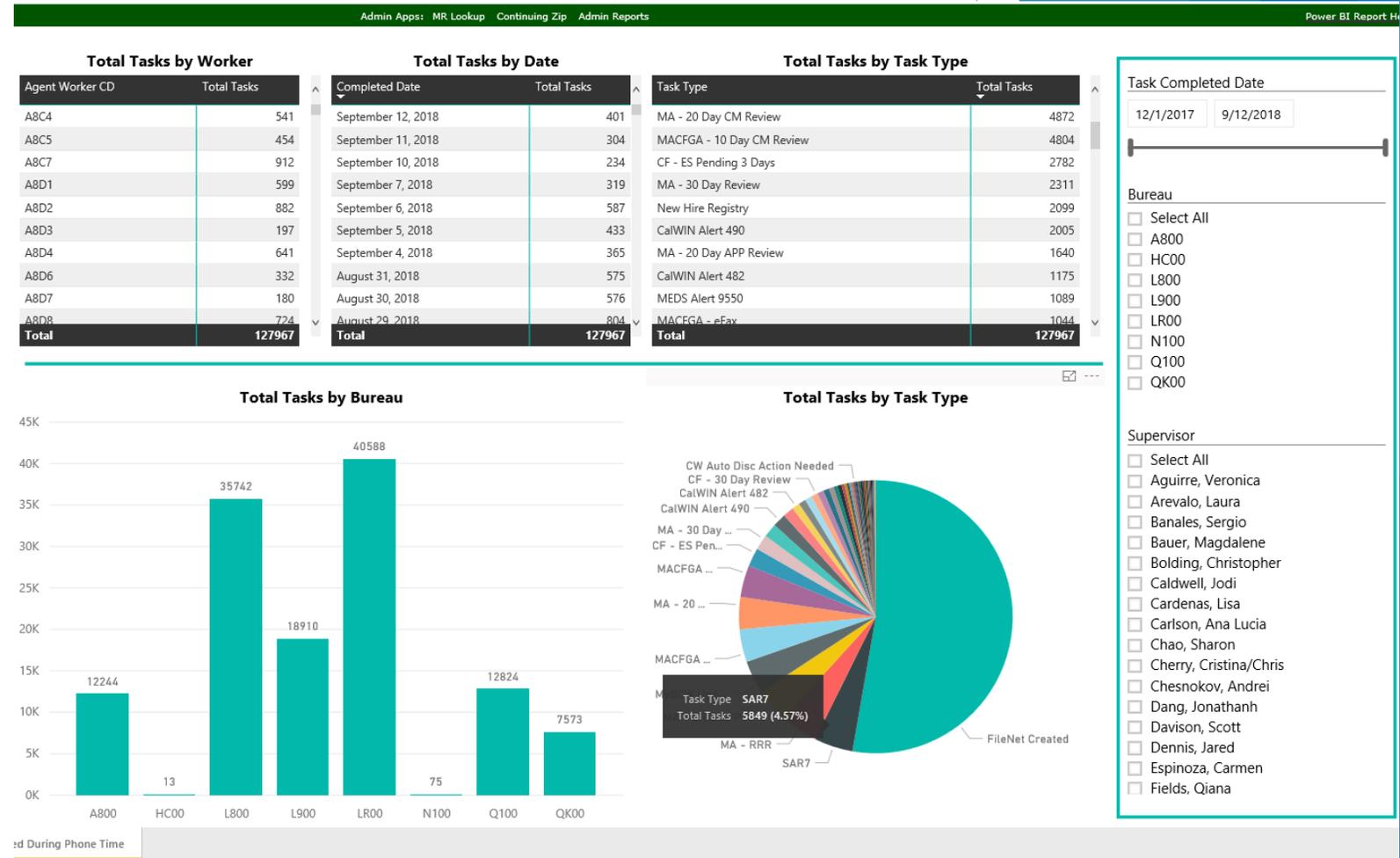


Service Center Dashboard - Agent activity/ history

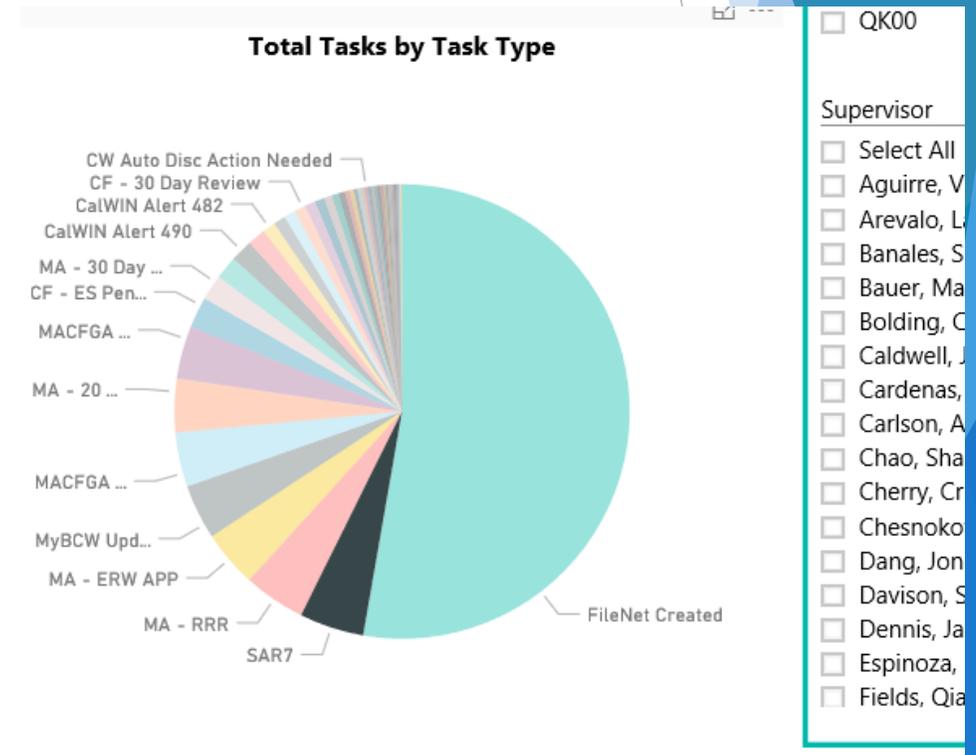
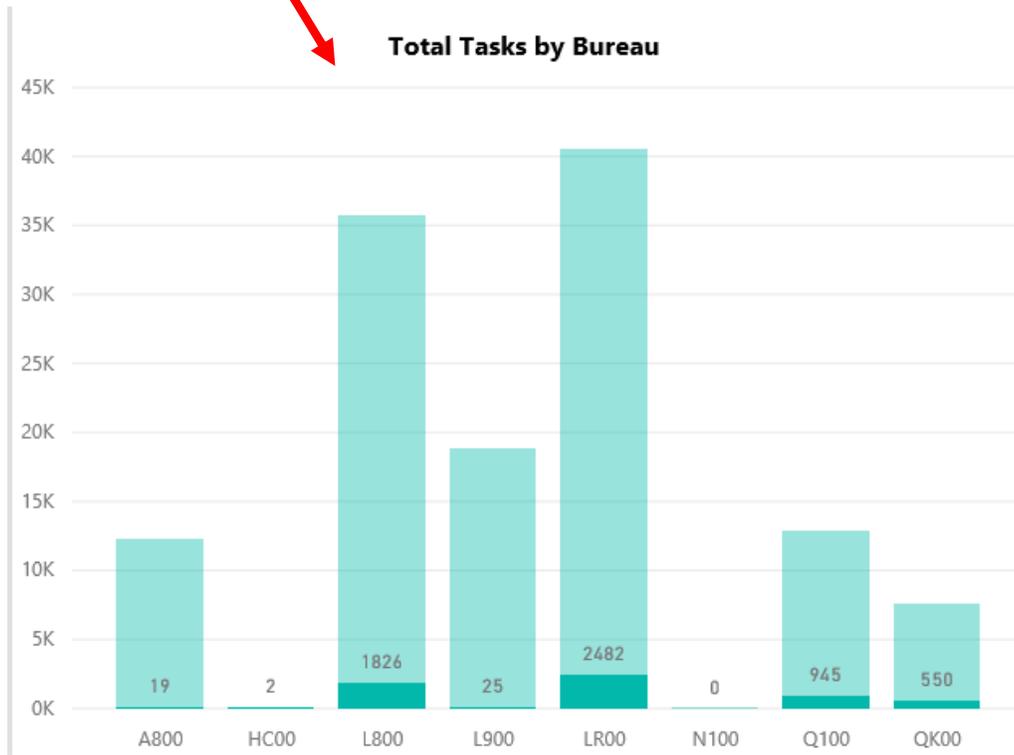
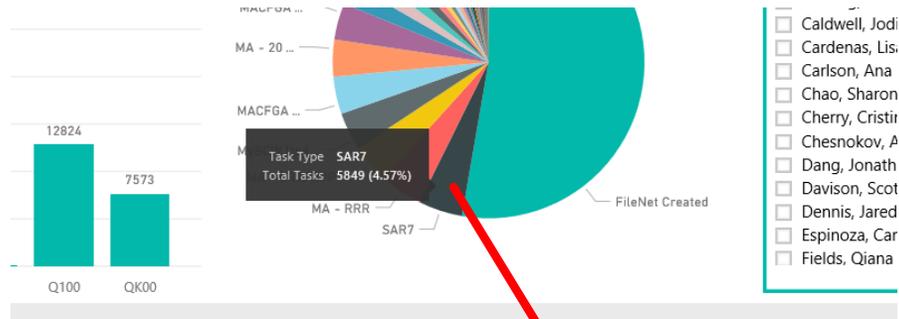


Interactive Reporting Power BI

- ▶ Allows exploration of data with filters, slicers and visual comparisons
- ▶ Self Service Reporting available with large data sets (Direct Query connection to SQL server)
- ▶ Drill down to detailed records
- ▶ Rapid report development from curated data sets (Data Warehouse)
- ▶ Sacramento migrating legacy reports to new Power BI platform



Power BI - Interactive filters for self-service reporting



Power BI - Interactive filters for self-service reporting

SHINE 1 - EFS Reservations- where Client slept previous night per EFS question responses

Monthly Count of Reservations by CREATE DATE

Create Date Month	ACCEPTED	ACCEPTED SHELTER	ACCEPTED SHELTER WITH NEXT MOVE	ACCEPTED SHELTER WITH VOA	ALREADY MOVED INTO APT	DISQUALIFIED	DIVERSION	DUPLICATE	FLEEING FELON	NO CONTACT	Not Disposition
3	1	1		5	4	2	7		2		2
4				2	5		5		4		1
5				3	6		4		3		
6				3		1	2		1		
7				1	1		2		3		
Total	30	14	41	48	77	83	17	166	1	48	1

Reservation Create Date

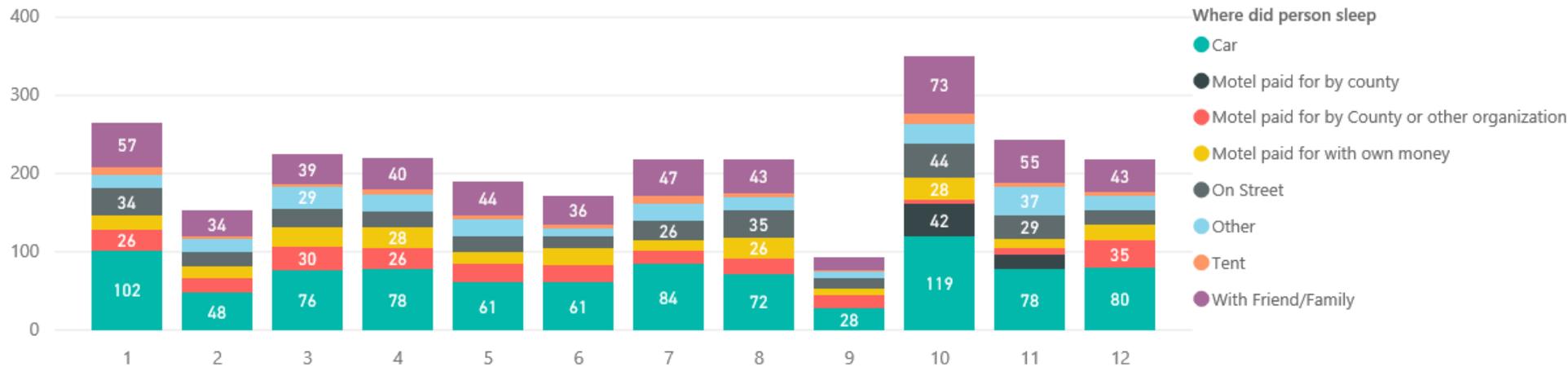
10/2/2017 9/12/2018

IsCWActive

False

True

CasID by Create Date Month and Where did person sleep



DispositionDescription

- ACCEPTED
- ACCEPTED SHELTER
- ACCEPTED SHELTER WITH NEXT MOVE
- ACCEPTED SHELTER WITH VOA
- ALREADY MOVED INTO APT
- DISQUALIFIED
-

Where did person sleep

- Car
- Motel paid for by county
- Motel paid for by County or other...
- Motel paid for with own money

Power BI - Results change with selections



SHINE 1 - EFS Reservations- where Client slept previous night per EFS question responses

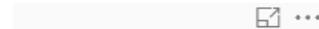
Monthly Count of Reservations by CREATE DATE



Create Date Month	ACCEPTED	ACCEPTED SHELTER	ACCEPTED SHELTER WITH NEXT MOVE	ACCEPTED SHELTER WITH VOA	ALREADY MOVED INTO APT	DUPLICATE	NO CONTACT	Not Dispositioned	REFUSED	STAYING WITH FAMILY DC NOT NEED FAMILY SHELTI
3		1	2	1	1				1	1
4									3	
5				2					2	
6									2	
7									1	
Total	4	1	6	7	2	1	3	26	5	

Reservation Create Date

10/2/2017 9/12/2018



IsCWActive

- False
- True

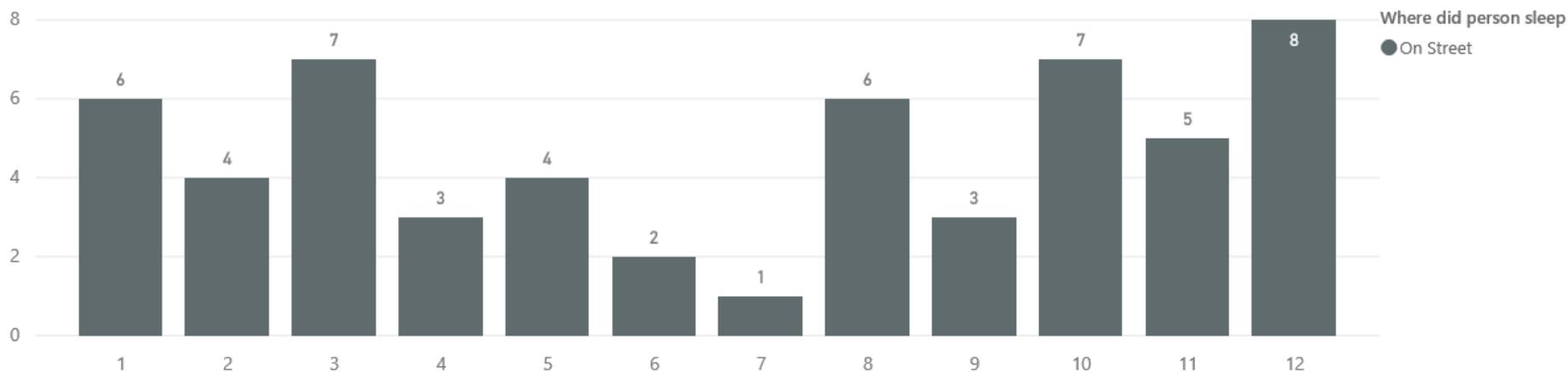
DispositionDescription

- ACCEPTED
- ACCEPTED SHELTER
- ACCEPTED SHELTER WITH NEXT MOVE
- ACCEPTED SHELTER WITH VOA
- ALREADY MOVED INTO APT
- DUPLICATE

Where did person sleep

- Other
- On Street
- Tent
- With Friend/Family

CasID by Create Date Month and Where did person sleep



CasID	LastName	FirstName	DateOfBirth	Is CW Active	Where did person sleep	BGC Status Description	Disposition Description	Phone	Email
-------	----------	-----------	-------------	--------------	------------------------	------------------------	-------------------------	-------	-------

Key Take Away #1

Data warehousing creates availability of information and opportunity to integrate data sets with real time processes

Example: Sacramento's Customer Information Portal (CIP) web application.

- ▶ 360 view of the case informs workers of upcoming appointments, tasks, documents returned, call history and case requirements in a single page with easy to use detail controls.
- ▶ Data that would normally be discovered through log in and searches in many systems is consolidated in the DataHub and returned in just seconds.
- ▶ Alerts, reminders and activity flags help guide workers to the most important details.

Key Take Away #2

Embrace data and analytics as a culture

Sacramento has transformed its reporting culture to leverage centralized, curated data for its reporting and analysis needs.

- ▶ DataHub is a unified, curated, and real time data store
- ▶ Data consumers are able to quickly find
- ▶ Business units empowered with “Big Picture” awareness of operations data that was previously too complex to blend.

Key Take Away #3

Real time data empowers decision making and rapid process reengineering

- ▶ Real time data dashboards display a simple graphical format layered throughout the visuals to provide both summary and detail information.
- ▶ Call center dashboards indicate the status of phone queues, call center agents, groups and critical business functions.
- ▶ Appointment scheduling and lobby/visitor data is displayed in a familiar graphical format using maps of the various facility lobbies.
- ▶ Schedule and workload are managed more effectively using the real time summary of entire workforce, while permitting the drill down to details in analysis and troubleshooting.

Key Take Away #4

Cost effectiveness

Sacramento County's Business Intelligence initiatives were developed within the existing database and server infrastructure of the department. The costs were limited to staffing resources of IT employees for a period of one year.

- ▶ Datasets and analytics tools promote rapid report development, greater access to information by business units and reduced security and performance risks.
- ▶ Hundreds of man hours saved per year in the basic administration and curating of the data.
- ▶ Unified reporting and analysis platform has saved an estimated 1000 hours of research and development time among reporting and solution support units in a single year.
- ▶ Some projects have experienced development times reduced by 50%.