Challenges and Lessons Learned from Leveraging Multiple Claims- and Encounter-Level Databases to Discover Insights into Prostate Cancer Diagnosis and Intervention

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Vizient University Health System Consortium

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Why Look Across Datasets?

- **Measure adoption of diagnostic and interventional innovations**
- **Monitor physician behaviors after new guidelines are published**
- **Study variation in how, where, and when treatments are adopted and applied to the patient population**

- **Healthcare claims trends**
  - 125.7 M outpatient hospital visits in 2011
  - 884.7 M physician office visits in 2014

- **160,000 new cases of prostate cancer diagnosed in 2017**

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Methods - Datasets

Retrospective study to examine trends in prostate cancer diagnostics and interventions across three databases:

1. **The largest payer based dataset (CMS LDS)**
2. **Claims data from the largest third party aggregator (Change Healthcare)**
3. **The largest all-payer hospital supplied encounter-level database for Academic and Community Hospitals (Vizient Clinical Database/Resource Manager – CDB/RM)**

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Methods – Study Period and Study Cohort

Convenience dataset:

- **2011 through 2015 for CMS LDS and CDB/RM databases**
  - CMS – Medicare fee for service claims – all providers
  - CDB/RM – hospital billing claims – all payers
- **2014-2016 for Change Health database**
  - All payer/all provider billing

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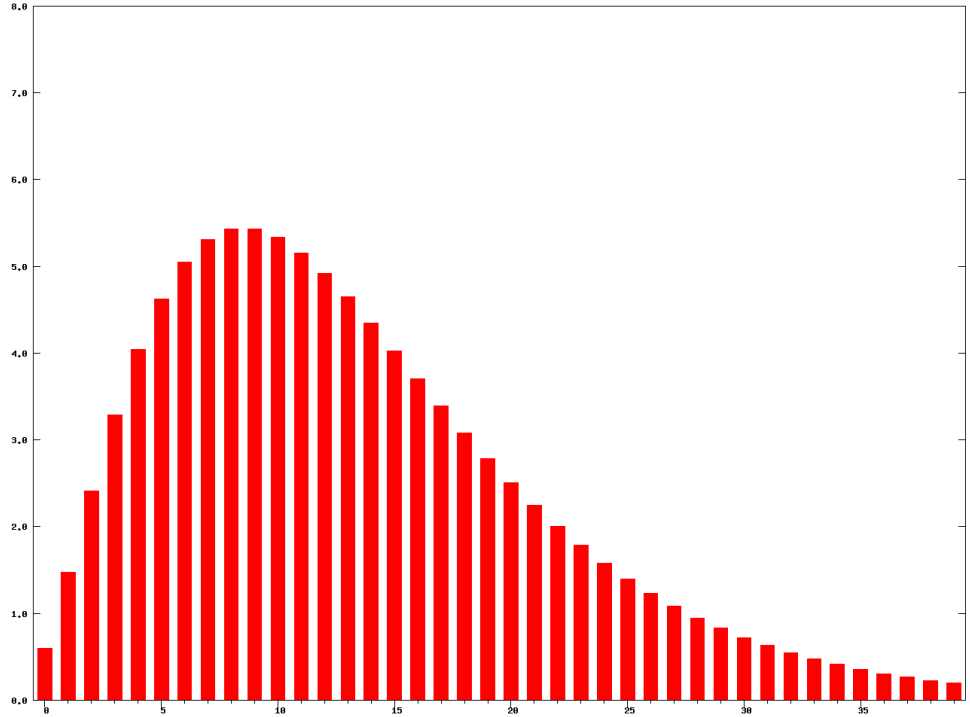
Methods - Analysis

Principally, descriptive

- **Means**
- **Medians**
- **Counts**



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Prostate Cancer Diagnostic Testing

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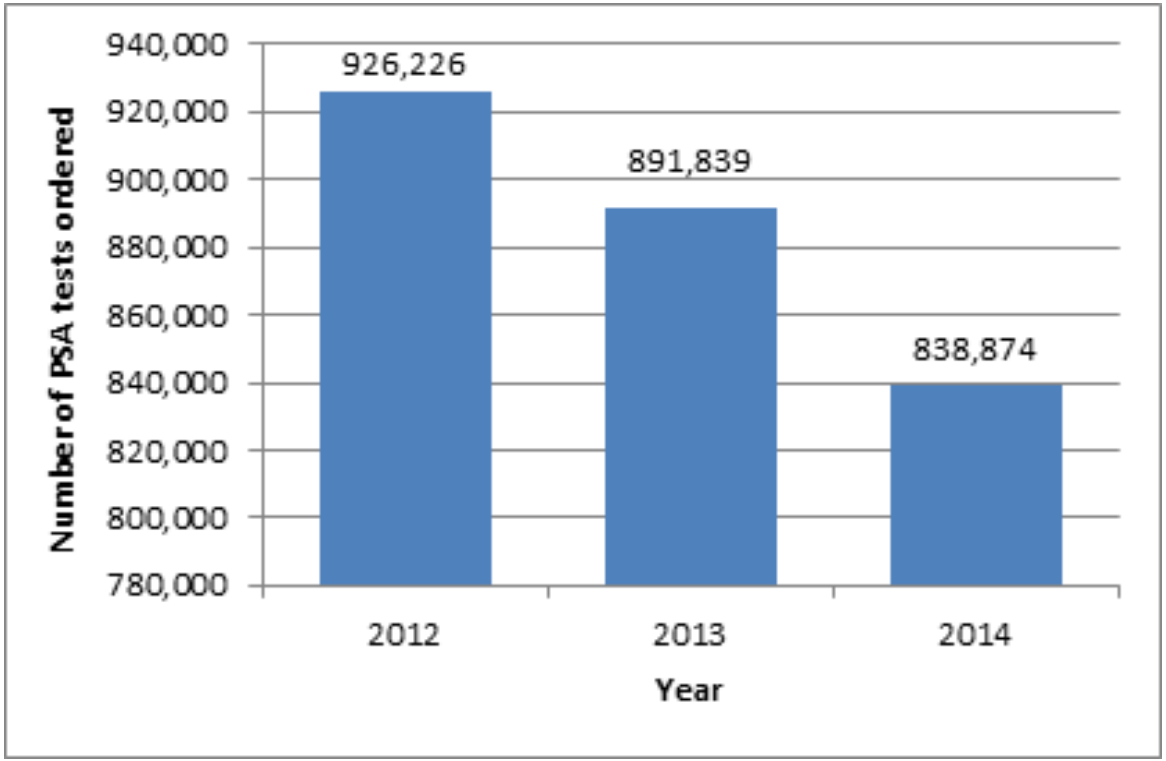
Number of PSA Tests ordered, by year



Source: CMS Medicare Provider Part D data, 2012-2014

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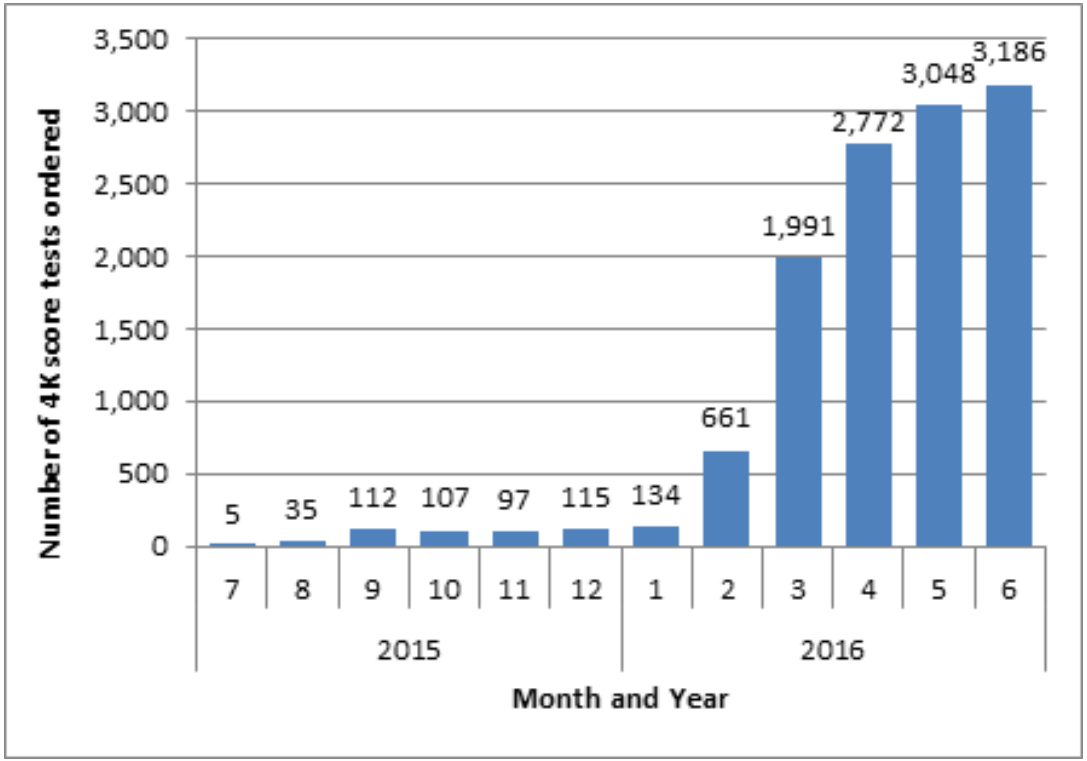
Vizient and Change Healthcare Payer Based Claims Warehouse Practice Diffusion for Northeast Market for 4K score Test



Source: Vizient CDB/RM dataset, 2015-2016

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Prostate Cancer Treatment

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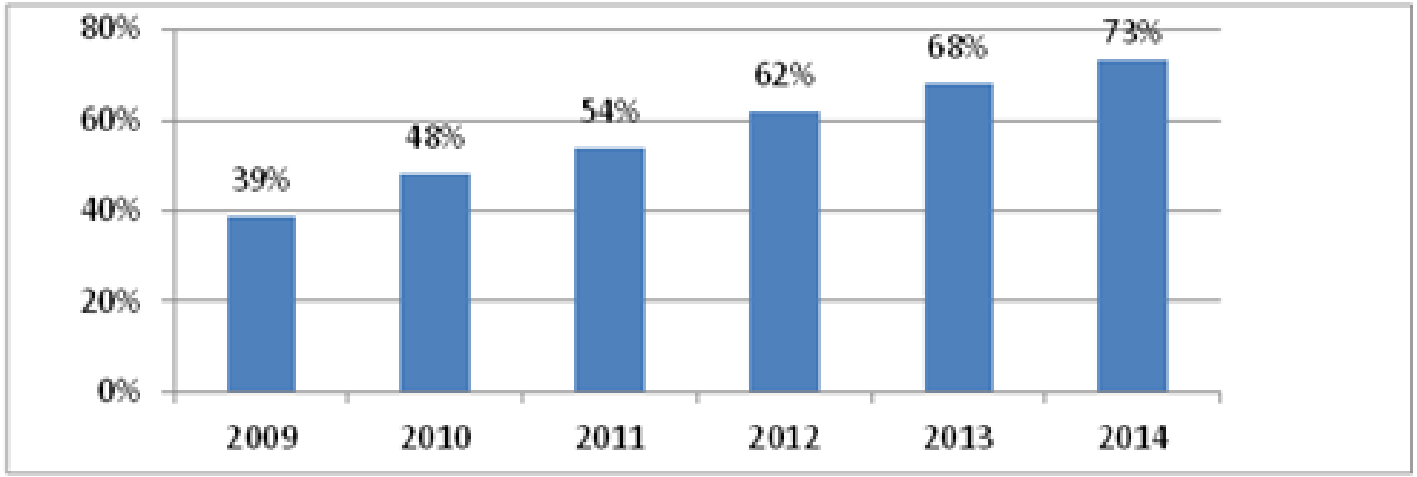
Emergence of Use of Robotic Technology in Prostate Cancer Therapy

Radical Prostatectomies

year_code	# Hospitals performing	# Hospitals using Robot Assist	% using robots
2009	1626	637	39%
2010	1584	756	48%
2011	1584	851	54%
2012	1501	936	62%
2013	1487	1010	68%
2014	1438	1045	73%



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Trends in Site of Prostate Cancer Therapies

Site Type	Intervention Category	Intervention Name
OP	Radiation Therapy	SBRT
OP	Radiation Therapy	Proton Beam Therapy
OP	Radiation Therapy	IMRT
OP	Radiation Therapy	BrachyTheapy
OP	Radiation Therapy	Other
OP	Focal Therapies	Cryo
OP	Focal Therapies	Laser Ablation
OP	Chemotherapy	Chemotherapy
OP	Hormone Therapy	Hormone Therapy
OP	OP Surgery	TURP
OP	OP Surgery	Open Prostatectomy
IP	IP Surgery	Radical Prostatectomy
IP	IP Surgery	Other Surgeries

Data Source:
LDS Data 2011-2015

2011	2013	2015
66.7%	71.6%	72.7%

2011	2013	2015
33.3%	28.4%	27.3%

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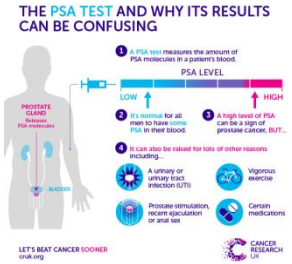
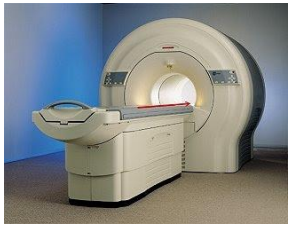
Some key findings related to diagnosis of prostate cancer

- Decrease in prostate specific antigen (PSA) tests ordered by urologists following 2013 changes in screening recommendations by the American Urological Association
- Changes in biopsy rate and shifts to less invasive diagnostic techniques and “watchful waiting”
- Emerging adoption of MRI to identify prostate cancer without biopsy or leading to targeted biopsy





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Some key findings related to interventions for prostate cancer

- Increasing shift in treatment site from inpatient to outpatient

- Decrease in rate of surgical procedures
- in prostate cancer patients overall

- Adoption and regional variation in robotic assisted prostatectomy procedures

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Significance

- Apply the multi-database approach to different disease states, innovations, technology adoption for a more robust understanding of how, when and where they are being applied
- Different databases each show different, sometimes contrasting, trends depending on the population being studied and types of data, showing the value of leveraging multiple databases to get a full picture of the healthcare landscape

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Next Steps

Research can be expanded to include other complementary healthcare databases including disease-specific registries (e.g., disease morphology and progression) and population databases, including census data to look at impact of social determinants of predictors of health on outcomes

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Linkages?

- Facilities (hospitals, clinics)
- Providers (physicians, APPs)
- Not patients in this exercise
- *However,*

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Upcoming and Future Data Combinations

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Contact Samuel F. Hohmann, PhD, at sam.hohmann@vizientinc.com for more information.