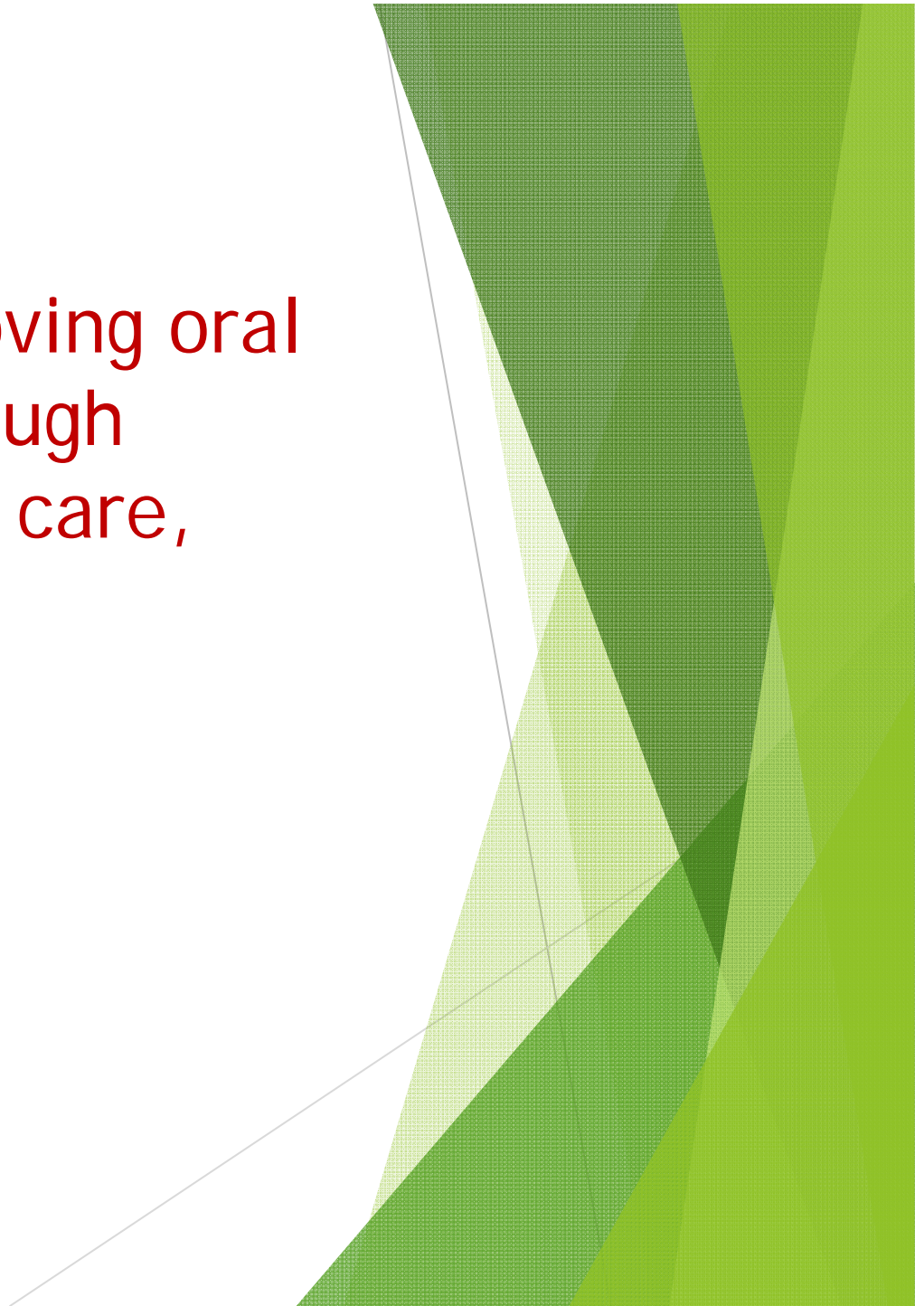
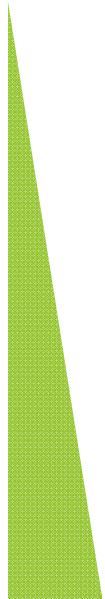


The Importance of Big Data for improving oral health of vulnerable populations through increased involvement of the patient care, research, and payer community



Objectives:

- ▶ To understand the current definitions and characteristics of “Big Data” in the biomedical and health research domains
- ▶ To learn how Big Data is intended to be used for policy and program management within the Medicaid oral health system
- ▶ To better understand the opportunities and challenges in using existing dental data sets for research, and the need for diagnostic codes
- ▶ To become aware of mechanisms for research and program support from the NIDCR and CMS that might be applicable for Big Data research.

Who is using Big Data for healthcare?

Northrop Grumman, UMBC team to study health data for populations



What is Big Data?

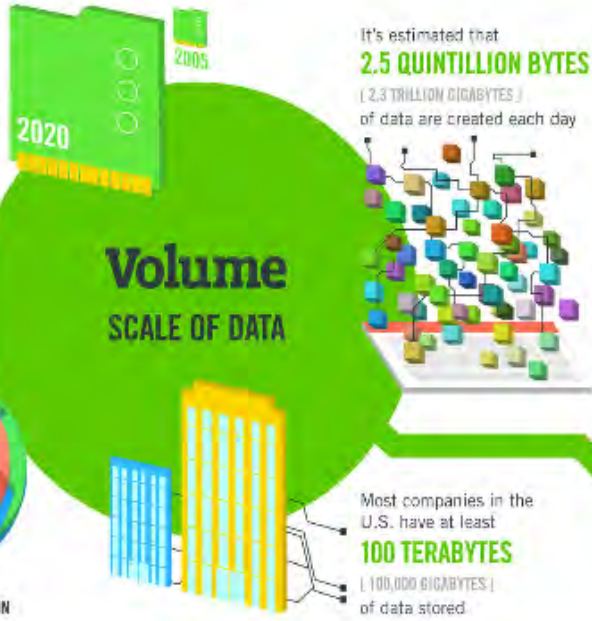
Any attribute of a data set that challenges a system's capabilities or business need.

Examples...

- ▶ Data too large to send via email
- ▶ Data too large or too diverse if structure to analyze ...

40 ZETTABYTES

[40 TRILLION GIGABYTES]
of data will be created by 2020, an increase of 300 times from 2005



6 BILLION PEOPLE have cell phones



WORLD POPULATION: 7 BILLION

The FOUR V's of Big Data

From traffic patterns and music downloads to web history and medical records, data is recorded, stored, and analyzed to enable the technology and services that the world relies on every day. But what exactly is big data, and how can these massive amounts of data be used?

As a leader in the sector, IBM data scientists break big data into four dimensions: **Volume, Velocity, Variety and Veracity**

Depending on the industry and organization, big data encompasses information from multiple internal and external sources such as transactions, social media, enterprise content, sensors and mobile devices. Companies can leverage data to adapt their products and services to better meet customer needs, optimize operations and infrastructure, and find new sources of revenue.

<http://www.ibm.com/press/us/2011/01/01/011101a.html>

By 2015, **4.4 MILLION IT JOBS** will be created globally to support big data, with 1.9 million in the United States



As of 2011, the global size of data in healthcare was estimated to be

150 EXABYTES [150 BILLION GIGABYTES]



By 2014, it's anticipated there will be

420 MILLION WEARABLE, WIRELESS HEALTH MONITORS



4 BILLION+ HOURS OF VIDEO are watched on YouTube each month



30 BILLION PIECES OF CONTENT are shared on Facebook every month



400 MILLION TWEETS are sent per day by about 200 million monthly active users

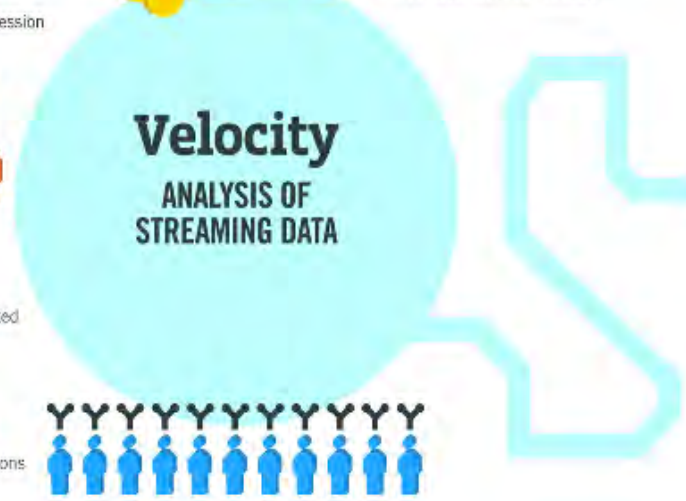


The New York Stock Exchange captures

1 TB OF TRADE INFORMATION during each trading session



Modern cars have close to **100 SENSORS** that monitor items such as fuel level and tire pressure



By 2016, it is projected there will be

18.9 BILLION NETWORK CONNECTIONS

- almost 2.5 connections per person on earth

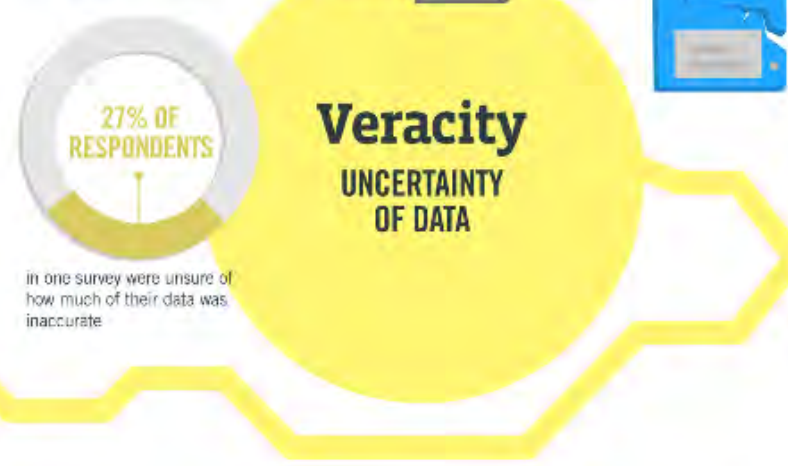


1 IN 3 BUSINESS LEADERS don't trust the information they use to make decisions



Poor data quality costs the US economy around

\$3.1 TRILLION A YEAR

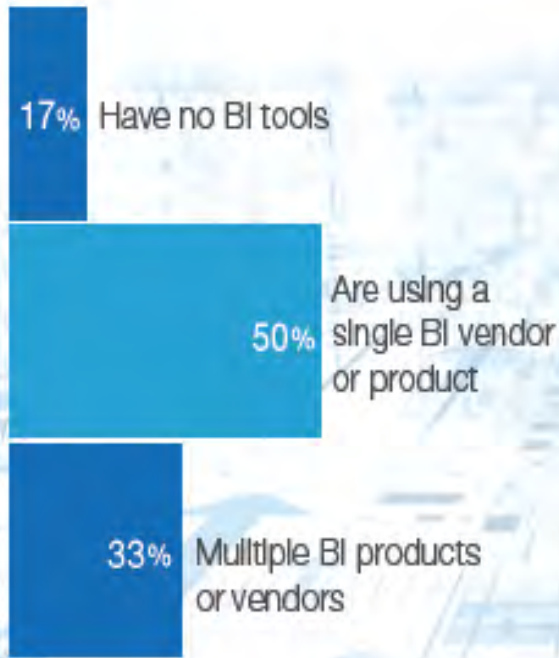


Within Health care

5 of the top purposes of clinical intelligence

- 1 Drive quality improvement programs
- 2 Identify individual care gaps
- 3 Stratify the population by level of risk
- 4 Measure long-term outcomes
- 5 Assess population health needs

How extensively are organizations using BI?



164,414

LIVES POTENTIALLY SAVED

A 2013 Healthgrades Hospital Clinical Excellence report found that, from 2009 through 2011, if all other hospitals performed at the level of Distinguished Hospitals for Clinical Excellence: 164,414 lives could have potentially been saved.

Our leaders on the journey...

- ▶ T. Bruce Dye Dental, Epidemiology Officer -- NIDCR

Wrestling with Big Data: Exploring Opportunities Using NHANES-Linked Datasets.

- ▶ Lynn D. Mouden, Chief Dental Officer – CMS

CMS Data Challenges: Uses, Requirements, and Opportunities.

- ▶ Peter Damiano, Director, Public Policy Center – U. Iowa

Using Big Data as Part of a Mixed Methods Approach to Evaluating Medicaid.

- ▶ Mary E. Foley Executive Officer- Medicaid, Medicare, CHIP Services
Dental Association

State need for Big Data for policy and administrative purposes.