North Dakota
Data Cleansing Project

Background

State Population Changes

- North Dakota's 2010 census was the second highest census count in the state's history and reflected a 5% increase from 2000

- Since the 2010 census count, North Dakota has seen a large influx of people in the western area of the state due to the oil boom in that area

- According to the April 2012 US Census news release, North Dakota had:
  - One of the top 50 fastest growing metro areas from 2010 – 2011
    - Bismarck, ND which is the state's capitol and 2nd largest city
  - Three of the nation's fastest growing micro areas between April 1, 2010 – July 1, 2011
    - Williston, ND was the #1 fastest growing micro area in the United States
    - Dickinson, ND was ranked #4
    - Minot, ND was ranked # 8 and was also one of the four micro areas with the highest numeric population gain between 2010 - 2011
  - One of the 10 fastest growing counties between 2000 - 2010
    - Williams County (where Williston is located) was ranked # 3

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NDIIS Background

- The North Dakota Immunization Information System (NDIIS) is a confidential, population-based, computerized information system that attempts to collect vaccination data for all North Dakotans
- Established in 1988 as a modem, dial-up system
- The NDDoH contracted with BCBSND in 1996 to develop the current web-based system
  - o NDIIS is located on their THOR (The Healthcare Online Resource) network.
- ND Century Code requires North Dakota providers enter all childhood (under 18 years of age) immunizations into the NDIIS within 4 weeks of administration

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NDIIS Background continued…

- Beginning in January 2006, the NDIIS is populated by electronic birth certificate information from ND Vital Statistics
  - The average amount of time between a child's birth and the establishment of an IIS record is 3.75 weeks
  - 68.3% of immunization data for children younger than 6 years of age is entered into the NDIIS within one day of administration
- Manual patient-level deduplication was added to the NDIIS in 2007 and an electronic deduplication algorithm was implemented in 2009
  - Since deduplication was added to the NDIIS, 41,934 records have been deleted
- As of August 31, 2013 the NDIIS is interoperable with 145 individual provider locations and the North Dakota Health Information Network (NDHIN)
  - Represent 48.8% of all kids and 55.4% of all doses administered to kids 18 and under
  - Represent 28.3% of all adults and 46.2% of all doses administered to adults 19 and older

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NDIIS Background continued…

- In 2010, functionality was added to the NDIIS to be able to mark patients as Moved Or Gone Elsewhere (MOGE) and Lost To Follow-up based on the American Immunization Registry Association (AIRA) Modeling of Immunization Registry Operations Workgroup (MIROW) document
  - Clients marked as MOGE or Lost To Follow-up are still considered active in the NDIIS but are excluded from provider reports and NDIIS data assessments
  - Providers can mark clients as MOGE if they should no longer be associated with their practice
    - Local Public Health Unit users and immunization program users can change the MOGE status of any client in the NDIIS
    - All other users can only change the MOGE status of clients associated with their provider (i.e. their provider it the last provider visited excluding influenza vaccine)
  - If a client is marked as MOGE or Lost to Follow-up and a new immunization is entered into their NDIIS record, their status is automatically set back to "Current Client"
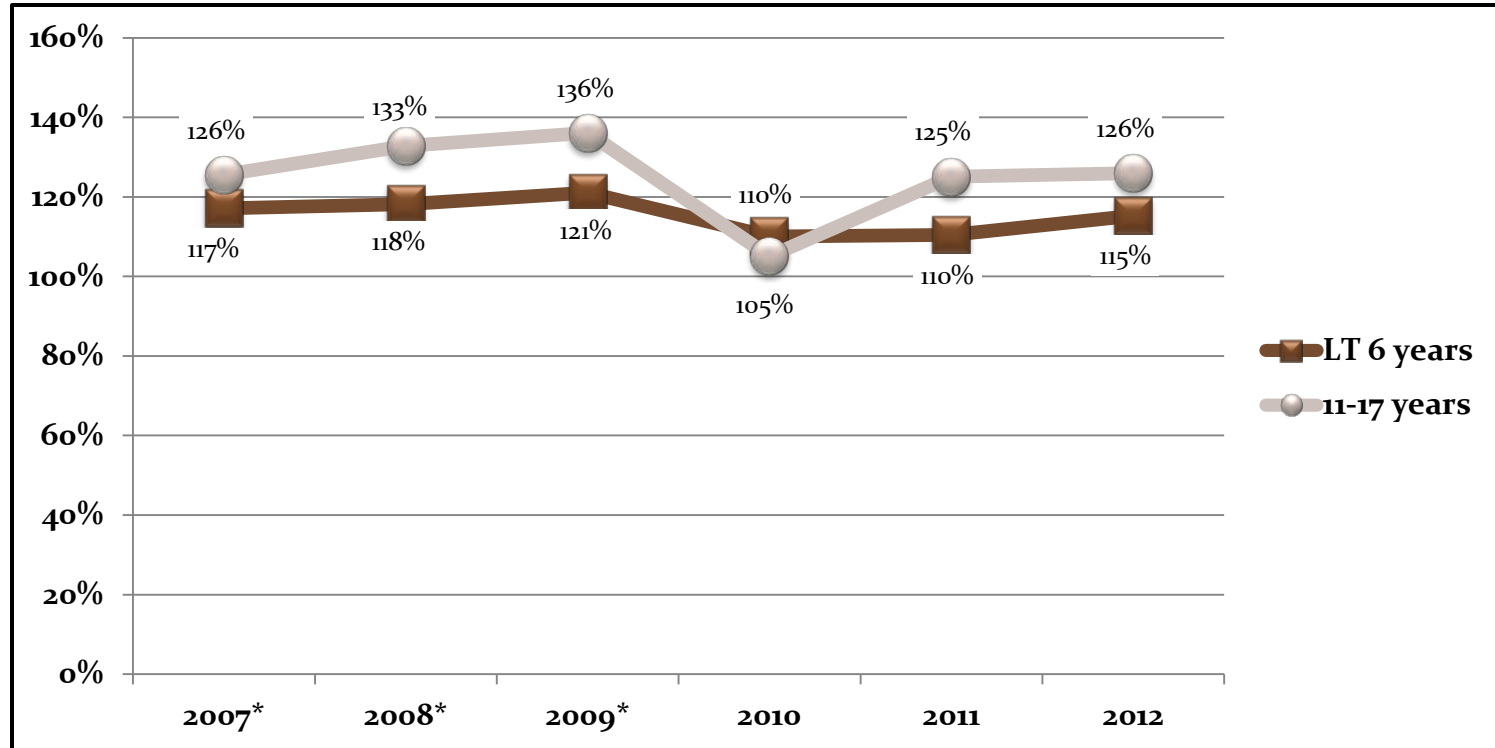
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Data Cleansing

Project Goal

➢ **Goal: to exclude kids and adolescents no longer living in North Dakota from denominators**

– North Dakota has consistently had over 100% of North Dakota kids in the NDIIS when compared to the US census (based on submitted IISAR data)

* IISAR adolescent data from 2007 – 2009 included 18 year olds

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Grants

➢ **2013 – 2017 Sentinel Site Grant**
  – Grant activity included submitting address data for kids 4 months - 6 years of age to the United States Postal Service (USPS) National Change of Address (NCOA)
  – Address data would be submitted quarterly throughout the 5 year grant period
    o Addresses will be updated and kids no longer living in North Dakota will be marked as MOGE

➢ **2012 – 2014 Prevention and Public Health Fund (PPHF) Program Area 6 Grant to utilize the IIS to improve adolescent vaccination coverage**
  – Grant activity included submitting address data for adolescents 11-17 years of age to the United States Postal Service (USPS) National Change of Address (NCOA)
  – Address data would be submitted quarterly throughout the 2 year grant period
    o Addresses will be updated and kids no longer living in North Dakota will be marked as MOGE

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Project

➤ NDDoH established a HIPAA Business Associates Agreement with Anchor Computer, 3rd party company who accepts address data files, runs the data against the NCOA database and returns matched files

➤ **Data Cleansing Project**

1. Client ID, Nam, Address and Parent/Guardian information pulled from the NDIIS for each age group

2. NDIIS data file imported into Statistical Analysis Software (SAS)

3. SAS program formats file according to Anchor Computer specifications

    a) Replaces client name with parent/guardian name when available since NCOA contains adult information

4. Data file exported from SAS and uploaded to Anchor Computer's secure web site

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Project

➤ **Data Cleansing Project continued...**

5. When updated address file is returned from Anchor Computer, client information is re-matched to the updated address by client ID using SAS

6. County field for all client's is updated in SAS based on NCOA confirmed/corrected zip code

7. SAS creates separate data file for MOGE updates, pulling kids with an address no longer in North Dakota

8. BCBSND uploads client file into NDIIS to update addresses for all clients and MOGE file to update client's MOGE status

➤ Through adolescent recall project, also get address for recalled kids sent through NCOA before postcards are mailed

– Adolescents with no forwarding address available but whose current address is not considered valid are sent to NDDoH to be marked as MOGE or Lost To Follow-up
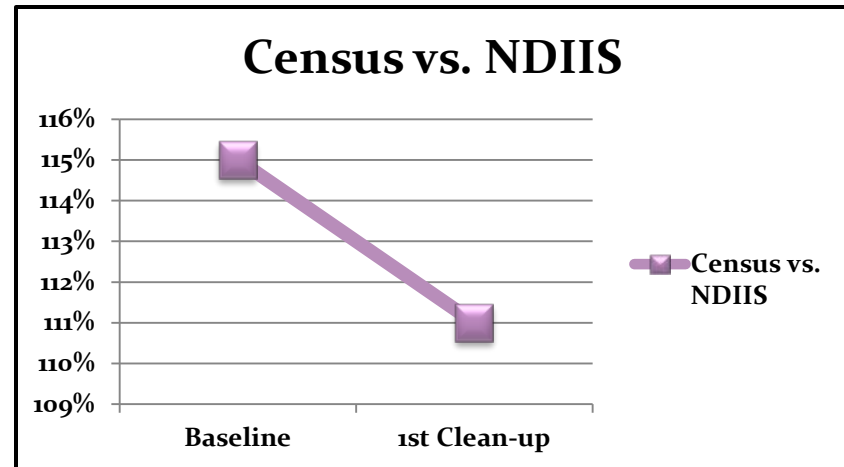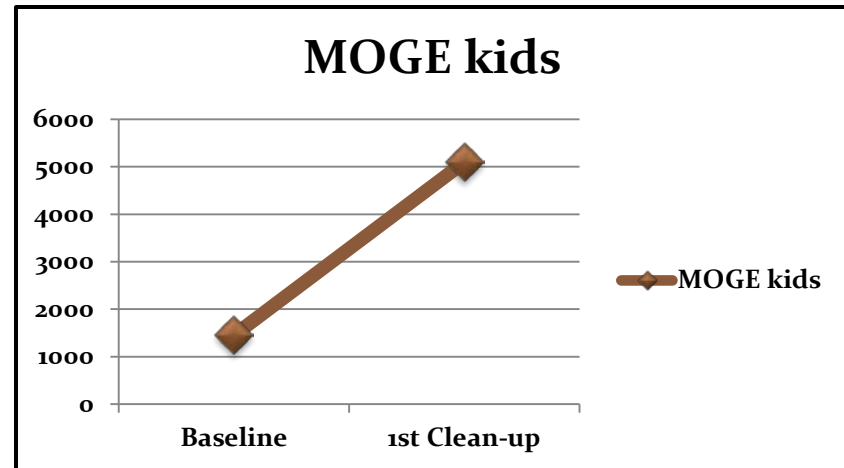
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NCOA Data - Kids

➤ First data file – submitted in March 2013

– Address data for 65,536 kids submitted

– NCOA found a match for 19.5% (12,776) of the submitted records

  o Of that 19.5%, 16.7% (10,963) had an available forwarding address

– 94.7% (62,073) had their zip code confirmed or corrected

  o 89.56% were confirmed

  o 5.15% were corrected

– 5.5% (3, 594) kids marked as MOGE or Lost To Follow-up due to having an out-of-state address

NCOA Data – Kids continued…

- ➢ Baseline data:
  - 1,451 total kids marked as MOGE or Lost To Follow-up
  - 2011 Census vs. NDIIS had 115% of population in NDIIS
- ➢ After first round of data clean-up:
  - 5,101 kids marked as MOGE or Lost To Follow-up
  - 2012 Census vs. NDIIS has 111% of population in NDIIS

MOGE kids

Census vs. NDIIS

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NCOA Data – Kids continued…

- ➢ Second data file – submitted in September 2013
  - – Address data for 60,782 kids submitted
  - – NCOA found a match for 9.06% (5,506) of the submitted records
    - o Of that 9.06%, 6.21% (3,776) had an available forwarding address
  - – 95.17% (57,849) had their zip code confirmed or corrected
    - o 93.17% were confirmed
    - o 2.01% were corrected
- ➢ NDDoH is in the process up re-matching clients from second NCOA data file to be uploaded and updated in the NDIIS
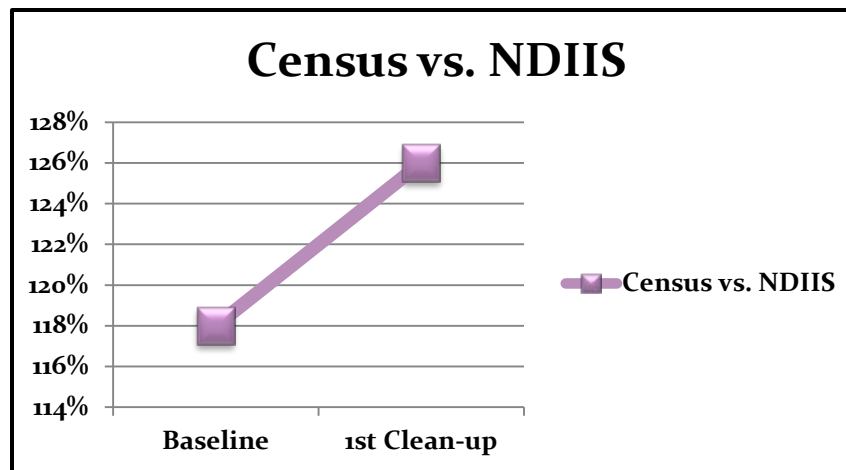
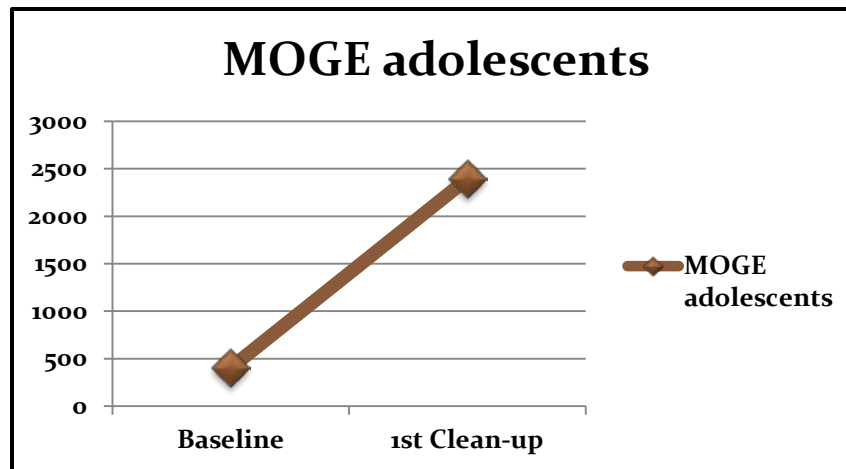**NORTH DAKOTA**
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NCOA Data - Adolescents

➢ First data file – submitted in March 2013
  – Address data for 65,536 adolescents submitted
  – NCOA found a match for 7.9% (5,175) of the submitted records
    o Of that 7.9%, 6.93% (4,539) had an available forwarding address
  – 91.67% (60,075) had their zip code confirmed or corrected
    o 86.19% were confirmed
    o 5.47% were corrected
  – 1.3% (824) adolescents marked as MOGE or Lost To Follow-up based on having an out-of-state address

➢ Adolescent Recall – postcards sent in June 2013
  – 40,704 adolescents on recall list to receive postcard
  – NCOA found a match for 4.1% (1,674) of adolescents

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NCOA Data – Adolescents continued...

- ➢ Baseline data:
  - 402 total adolescents marked as MOGE or Lost To Follow-up
  - 2011 Census vs. NDIIS had 118% of population in NDIIS
- ➢ After first round of data clean-up (NCOA file and postcard process):
  - 2,393 adolescents marked as MOGE or Lost To Follow-up
  - 2012 Census vs. NDIIS has 126% of population in NDIIS

MOGE adolescents

Census vs. NDIIS

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Challenges
&
Overcoming Barriers

Challenges & Limitations

➢ **The NDIIS only allows for one address per client**

➢ **MOGE kids may still live in North Dakota, were just set to no longer be associated with their current last provider visited**
   – No way to differentiate MOGE kids who should not longer be associated with their provider from those that have moved out of state and should no longer be included in our denominator, especially if their address is not updated and still lists North Dakota as their state of residence

➢ **NCOA only contains adult information**
   – Kids with incomplete, missing or incorrect parent/guardian information in the NDIIS will most likely not be found through this data clean-up process

➢ **NCOA is only address data, not phone numbers**
   – Still have invalid phone number data for some NDIIS clients
   – Not able to reach kids using auto-dialer phone system for recall

➢ **Mobility of population**
   – Individuals and families coming in from out of state may stay for only a few months at a time so may not use the USPS NCOA
   – Difficult for the US Census to accurately reflect the state's population

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Next Steps

➢ **NDDoH Immunization Program will work with BCBND to make changes to the NDIIS client and MOGE status fields**
  – Changes will allow NDDoH staff to differentiate between those kids that should be excluded **from those that should no longer be associated with their provider**

➢ **Working on contract with Thomas Reuters CLEAR Batch**
  – Uses additional data sources, other than the USPS NCOA, to find updated address and phone number data

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Questions?

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