

Project Child HANDS

Child Care, Subsidy and Early Education: **Helping Analyze Needed Data Securely**

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Project Child HANDS

- Review purpose and development
- Present an overview of its technology
- Present preliminary research results
- Discuss current status, next steps
 - Insights gained so far
 - Integration with VLDS
- Examples of policy and program questions



Project Child HANDS: What is it?

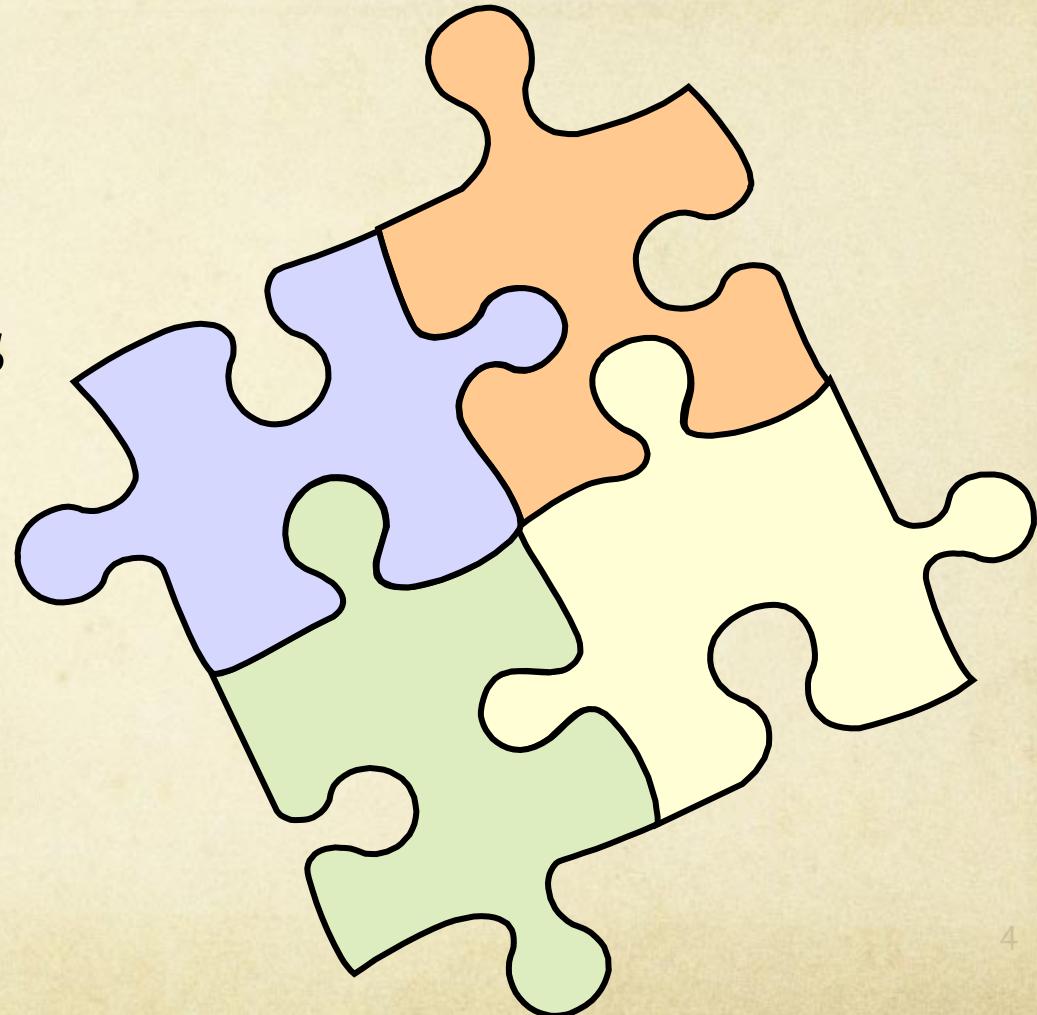
- A system for cross-agency linking of early childhood data for policy analysis and program evaluation
- Uses primarily administrative data
- Child-level, family-level and program-level linkage



Project Child HANDS

GOAL:

Put all the pieces
together to
answer
important
questions



What are Administrative Data?

- Administrative records
 - Program eligibility, participation, demographics (client-level)
 - Payment records, provider information, quality data (program-level)
 - Birth records (child- and family-level)
- School records (mostly child-level)
 - Demographics
 - Enrollment, attendance
 - Special education status
 - Screeners and Standard of Learning test scores

Project Child HANDS

- Is compliant with Federal and State Privacy Laws
- Uses a federated architecture
- Does not require new “data center” establishment (low cost)
- Can be easily expanded to include additional data partners
- Uses compatible technologies with other state data initiatives (e.g. VA Longitudinal Data System)

Where did it come from?

- U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation (Cooperative Agreement HHS-#90YE0106)
- Three years + no cost extension (Oct 1, 2008 – Sept 30, 2012)
- State-University partnership grants
- Purpose to improve state data capacity for child care subsidy and related early childhood programs
- Virginia 1 of 4 states (with Maryland, Maine, South Carolina)



Project Child HANDS

Initial Partners

- Virginia Department of **Social Services**, Child Care + Early Childhood Development (Lead Agency)
- Virginia Department of **Education**, Research and Strategic Planning
- Child Development Center for Learning and Research & the Institute for Policy and Governance, **Virginia Tech**



Project Child HANDS

○ Child Care Assistance (Subsidy) Program

- Federal Work support program
- Administered through states (Block grants)
- Eligibility based on work, training and income status
- Lose work, lose child care assistance
- Birth through age 12
- Increasing emphasis also on children's development



Project Child HANDS in Action

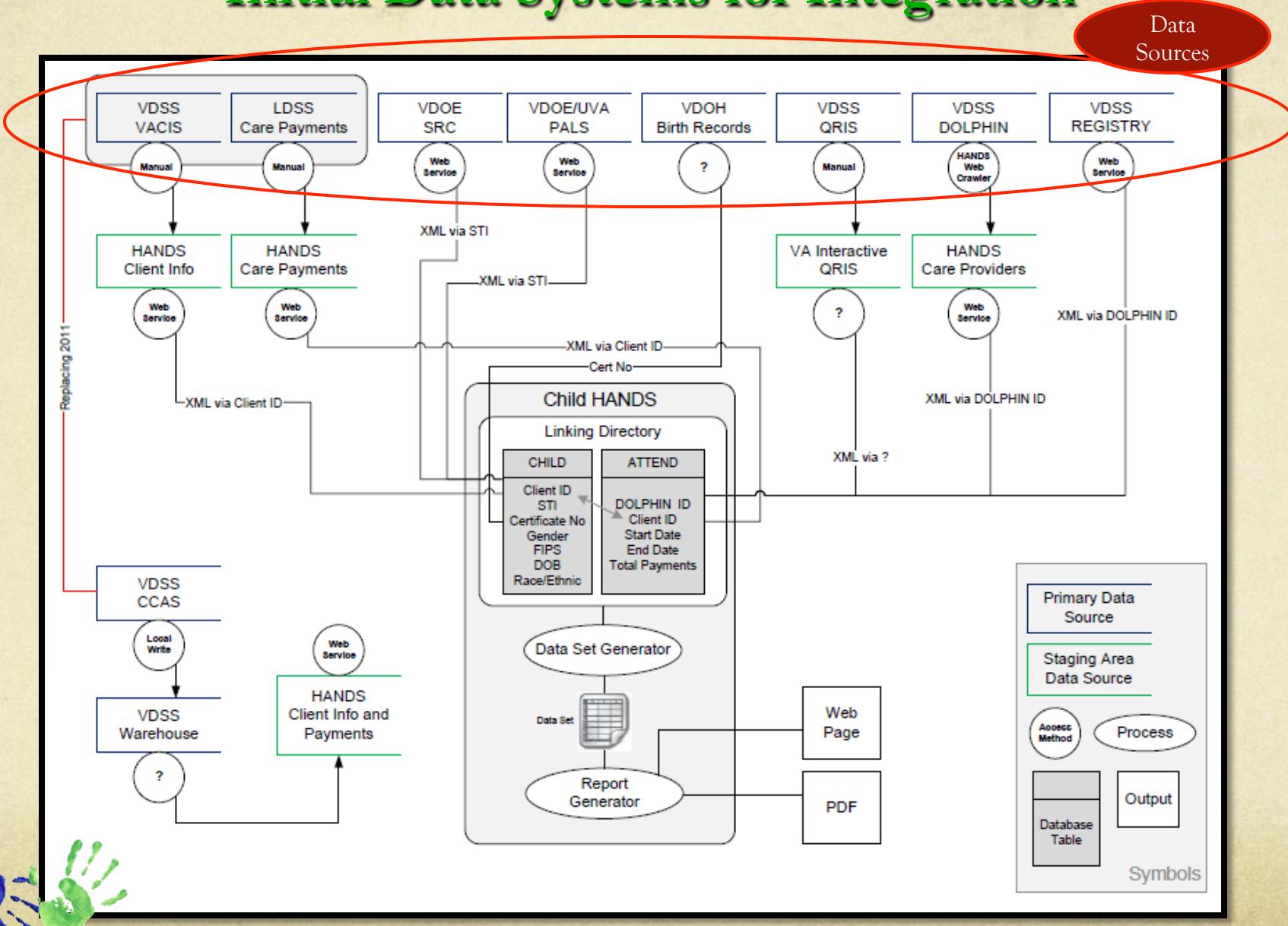
Initial Research Study

Initial Questions To Drive Development

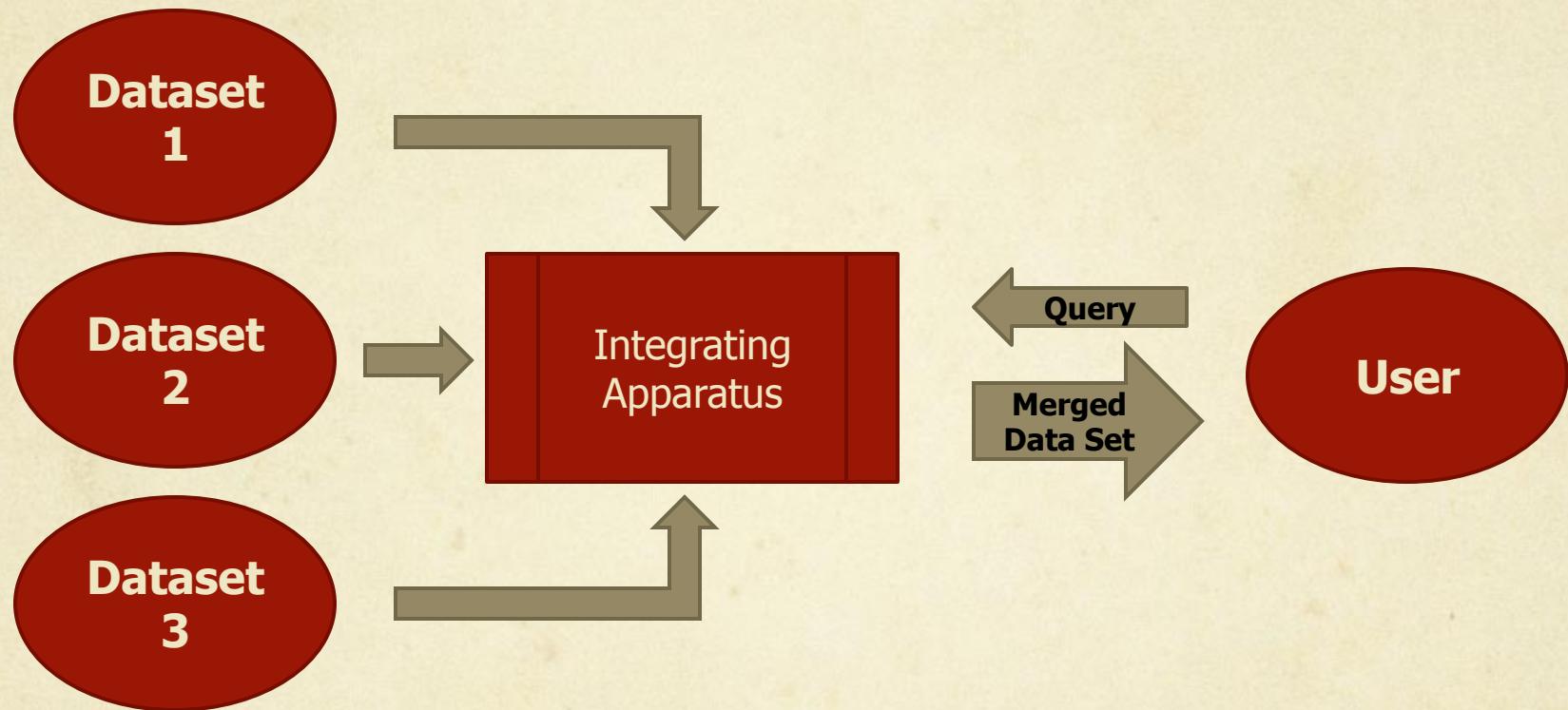
1. What type of care are parents choosing with subsidy dollars?
2. What is the quality of the child care?
3. How are their children doing in Kindergarten?



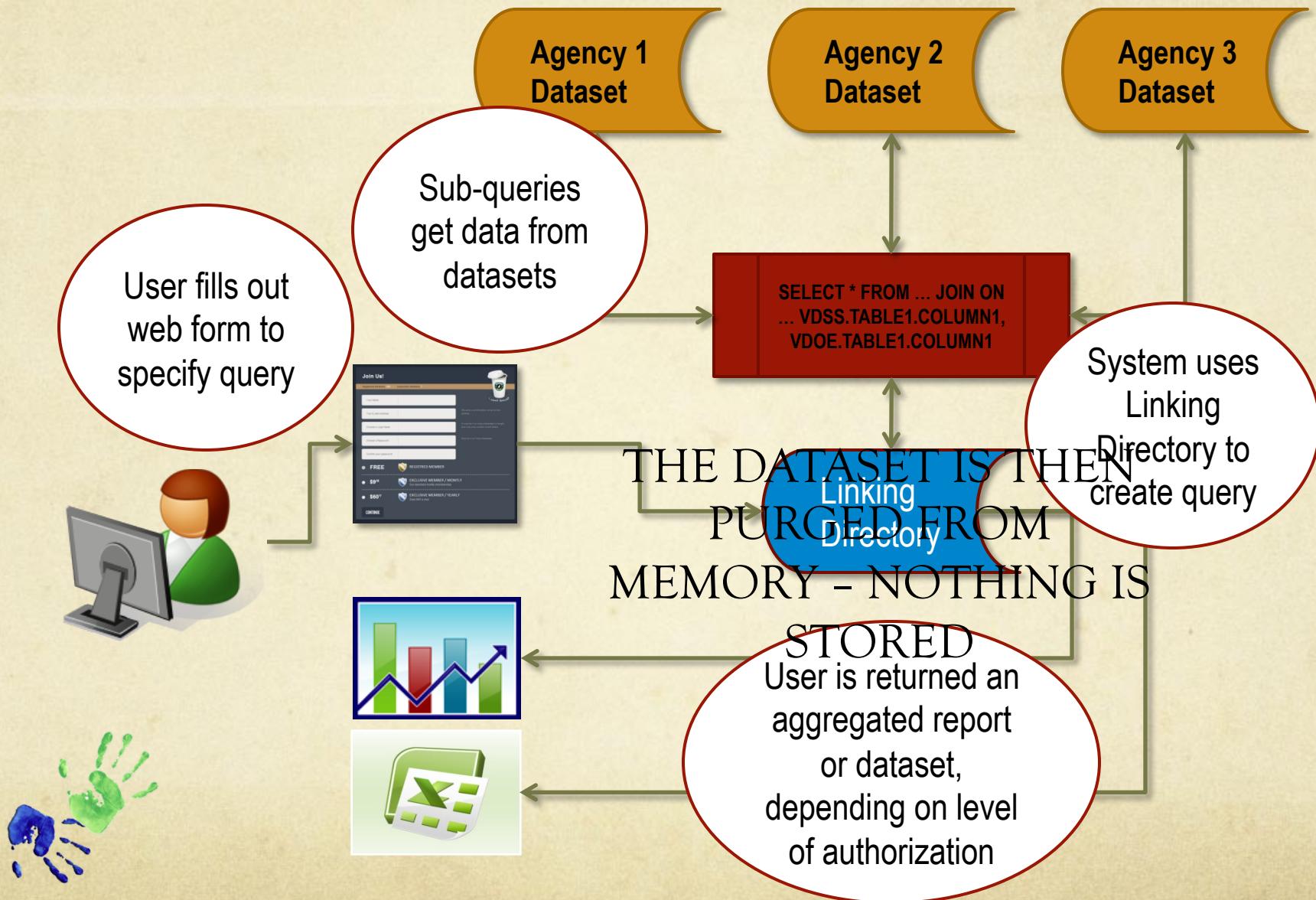
Initial Data Systems for Integration



What is a Federated Data System?



HANDS Federated Process – Data Sets are not Retained



What does the system create?

A Multi-Agency Data Set of De-Identified Virtual Child Records Or Program Records



RESPONSIBLE DIVISION NUMBER	PROGRAM_NAME	CLIENT BIRTHDATE
RESPONSING SCHOOL NUMBER	ADDRESS_1	LOCALITY_RPS
SERVING DIVISION CODE	ADDRESS_2	PROGRAM_CATEGORY
SERVING SCHOOL/CENTER CODE	CITY	SUBSIDY_TYPE
ENTRY DATE	ZIP_CODE	SUBSIDY_ELEGIBILITY_TYPE
RACIAL/ETHNIC CODE (PRE 2010)	PHONE	CLIENT_SEX_CODE
GENDER_CODE	LICENSE_TYPE	CLIENT_RACE_CODE
BIRTH_DATE	EXPIRATION_DATE	PARENT_INCOME
GRADE_LEVEL_CODE	ADMINISTRATOR	PARENT_INCOME_SOURCE
KINDERGARTEN HALF-DAY FLAG	BUSINESS_HOURS	PARENT_EMPLOYMENT_TYPE
PRIMARY DISABILITY CODE	CAPACITY	PARENT_OCCUPATION_TYPE
DISADVANTAGED STATUS FLAG	AGES	SEX_OF_CHILD
COUNTRY_OF_BIRTH_CODE	CRITICAL VIOLATIONS PREVIOUS YEAR	RACE_OF_CHILD
HOME_LANGUAGE_CODE	ECERS-R-INDOOR SPACE	DATE_OF_BIRTH
IMMIGRANT_STATUS_FLAG	ECERS-R-FURN. FOR ROUTINE CARE	PLURALITY
MIGRANT_STATUS_FLAG	ECERS-R-FURN. FOR RELAX	HOSPITAL_OF_BIRTH
GIFTED_CODE	ECERS-R-ROOM ARRANGEMENT	PLACE_OF_BIRTH
GIFTED_REFERRAL_FLAG	ECERS-R-SPACE FOR PRIVACY	PLANNING_DISTRICT_PLACE_OF_BIRTH
TITLE_I_CODE	ECERS-R-CHILD-RELATED DISPLAY	PLACE_OF_MOTHER
AGGREGATE_DAYS_PRESENT	ECERS-R-SPACE FOR GROSS MOTOR	ZIP_CODE
AGGREGATE_DAYS_ABSENT	ECERS-R-GROSS MOTOR EQUIP.	RACE_OF_MOTHER
RETENTION_FLAG	ECERS-R-GREETINGS/DEPARTING	AGE_OF_MOTHER
KINDERGARTEN_READINESS_ASSESSMENT_FLAG	ECERS-R-MEALS/SNACKS	MOTHER'S_PLACE_OF_BIRTH
SCHOOL_CHOICE_STATUS_CODE	ECERS-R-NAP/REST	MOTHER'S_EDUCATION
SUPPLEMENTAL_EDUCATION_SERVICES_CODE	ECERS-R-TOILETING/DIAPERING	RACE_OF_FATHER
PK_EXPERIENCE_CODE	ECERS-R-HEALTH PRACTICES	AGE_OF_FATHER
PK_WEEKLYTIME_CODE	ECERS-R-SAFETY PRACTICES	FATHER'S_PLACE_OF_BIRTH
RESIDENCE_ZIP_CODE	ECERS-R-BOOKS AND PICTURES	FATHER'S_EDUCATION
UNEXCUSDED_ABSENCES	ECERS-R-ENCOURAGING INDEPENDENCE TO TMM.	INFORMANT
FOSTER_CARE_FLAG	ECERS-R-USING LANG TO DEV RELATIONSHIP	ATTENDANT
ETHNIC_FLAG (2010-)	ECERS-R-INFORMATION OF LANG	DATE_RECORD_FILED
RACE_CODE (2010-)	ECERS-R-MOTOR	LIVE_BIRTHS_NOW_LIVING
LEP_STATE_CODE	ECERS-R-ART	LIVE_BIRTHS_NOW_DEAD
RECEIVING_ESL_SERVICES_CODE	ECERS-R-MUSIC/MOVEMENT	BIRTH_ORDER
PROJECTED_LEP_STATE_CODE	ECERS-R-BLOCKS	LEGITIMACY
DATE_OF_BIRTH	ECERS-R-K-SAND/WATER	WEIGHT_AT_BIRTH
STUDENT_GENDER	ECERS-R-DRAMATIC PLAY	DATE_LAST_LIVE_BIRTH
ETHNICITY	ECERS-R-NATURE/SCIENCE	DATE_LAST_OTHER_TERMINATION
PRIMARY_DISABILITY	ECERS-R-MATH/NUMBER	DATE_LAST_NORMAL_MENSES
DISTRICT_NAME	ECERS-R-USE OF TV, VIDEO, COMPUTERS	Apgar_1_Minute
SCHOOL_NAME	ECERS-R-PROMOTING ACCEPTANCE OF DIVERSITY	Apgar_5_Minutes
READING_FIRST_SCHOOL	ECERS-R-SUPERVISION OF GROSS MOTOR	PHYSICIAN'S ESTIMATE OF GESTATION
SES (% FREE/REDUCED LUNCH)	ECERS-R-GENERAL SUPERVISION	MONTH_OF_PREGNANCY_PREGNATAL_CARE_BEGAN
TITLE_I SCHOOL	ECERS-R-DISCIPLINE	NUMBER_OF_PREGNATAL_VISITS
TITLE_I TARGETED_ASSISTED_SCHOOL	ECERS-R-STAFF-CHILD INTERACTION	HISPANIC_ORIGIN_OF_MOTHER
CLASS_GRADE	ECERS-R-INTERACTIONS AMONG CHILDREN	HISPANIC_ORIGIN_OF_FATHER
SERVICES - ENGLISH AS A SECOND LANGUAGE	ECERS-R-SCHEDULE	MOTHER_TRANSFERRED_PRIOR_TO_DELIVERY
SERVICES - TITLE I	ECERS-R-FREE PLAY	INFANT_TRANSFERRED
SERVICES - ONE-ON-ONE TUTORING	ECERS-R-GROUP TIME	MEDICAL_HISTORY_FOR_THIS_PREGNANCY
SERVICES - NONE	ECERS-R-PROVISIONS FOR CHILDREN W/ DISABILITIES	TOBACCO_USE_DURING_PREGNANCY
SERVICES - OTHER	ECERS-R-PROVISIONS FOR PARENTS	AVERAGE_NUMBER_OF_CIGARETTES_PER_DAY
SERVICES - OTHER NAME	ECERS-R-PROVISIONS FOR PERSONAL NEEDS/STAFF	ALCOHOL_USE_DURING_PREGNANCY
ASSESSMENT_FORM (A, B, OR C)	ECERS-R-PROV FOR PROFESSIONAL NEEDS/STAFF	AVERAGE_NUMBER_OF_DRINKS_PER_WEEK
ASSESSMENT_DATE	ECERS-R-STAFF INTERACTION AND COOPERATION	WEIGHT_GAINED_DURING_PREGNANCY (LBS)
GROUP_RHYME_AWARENESS	ECERS-R-SUPERVISION AND EVAL. OF STAFF	OBSTETRIC PROCEDURES
INDIVIDUAL_RHYME_AWARENESS	ECERS-R-OPPORTUNITIES FOR PROFESSIONAL GROWTH	EVENTS_OF_LABOR_AND/OR_DELIVERY
GROUP_BEGINNING_SOUND_AWARENESS	CLASS-POSITIVE CLIMATE	METHOD_OF_DELIVERY
INDIVIDUAL_BEGINNING_SOUND_AWARENESS	CLASS-NEGATIVE CLIMATE	CONDITIONS_OF_THE_NEWBORN
ALPHABET_RECOGNITION - LOWERCASE	CLASS-TEACHER SENSITIVITY	CONGENITAL_ANOMALIES_OF_CHILD
LETTER_SOUNDS	CLASS-RESPECT FOR STUDENT PERSPECTIVES	SOURCE_OF_PREGNANT_CARE
SPELLING-TOTAL SCORE	CLASS-BEHAVIOR MANAGEMENT	METHOD_OF_PAYMENT
CONCEPT_OF_WORD: POINTING	CLASS-PRODUCTIVITY	HEROIN_USED
CONCEPT_OF_WORD: WORD_ID	CLASS-INSTRUCTIONAL LEARNING FORMATS	METHADONE_USED
CONCEPT_OF_WORD: WORD_LIST	CLASS-CONCEPT DEVELOPMENT	MARIJUANA_USED
CONCEPT_OF_WORD: TOTAL	CLASS-QUALITY OF FEEDBACK	COCAINE_USED
PREPRIMER_WORD_LIST	CLASS-LANGUAGE MODELING	AMPHETAMINES_USED
PRIMER_WORD_LIST	CLASS-SE	OTHER_DRUGS_USED
FIRST_GRADE_WORD_LIST	CHILD CARE PAYMENTS TOTAL	
ENTRY_LEVEL_SUMMED_SCORE	CHILD CARE FIRST PAYMENT DATE	
IDENTIFIED_BELOW_BENCHMARK	CHILD CARE LAST PAYMENT DATE	

VDOE - Phonological Awareness Literacy Screening (PAL)

VDOE - Student Record Collection (SRC)

VDOE - Division of Special Education Programs Help and Information System (DOSPEHS)

VDOE - Virginia Client Information System (VCIS)

VDOE - Virtual Record Birth

VDOE - Quality & Accountability System (QAS)

VDOE - Division of Early Childhood Education (DECE)

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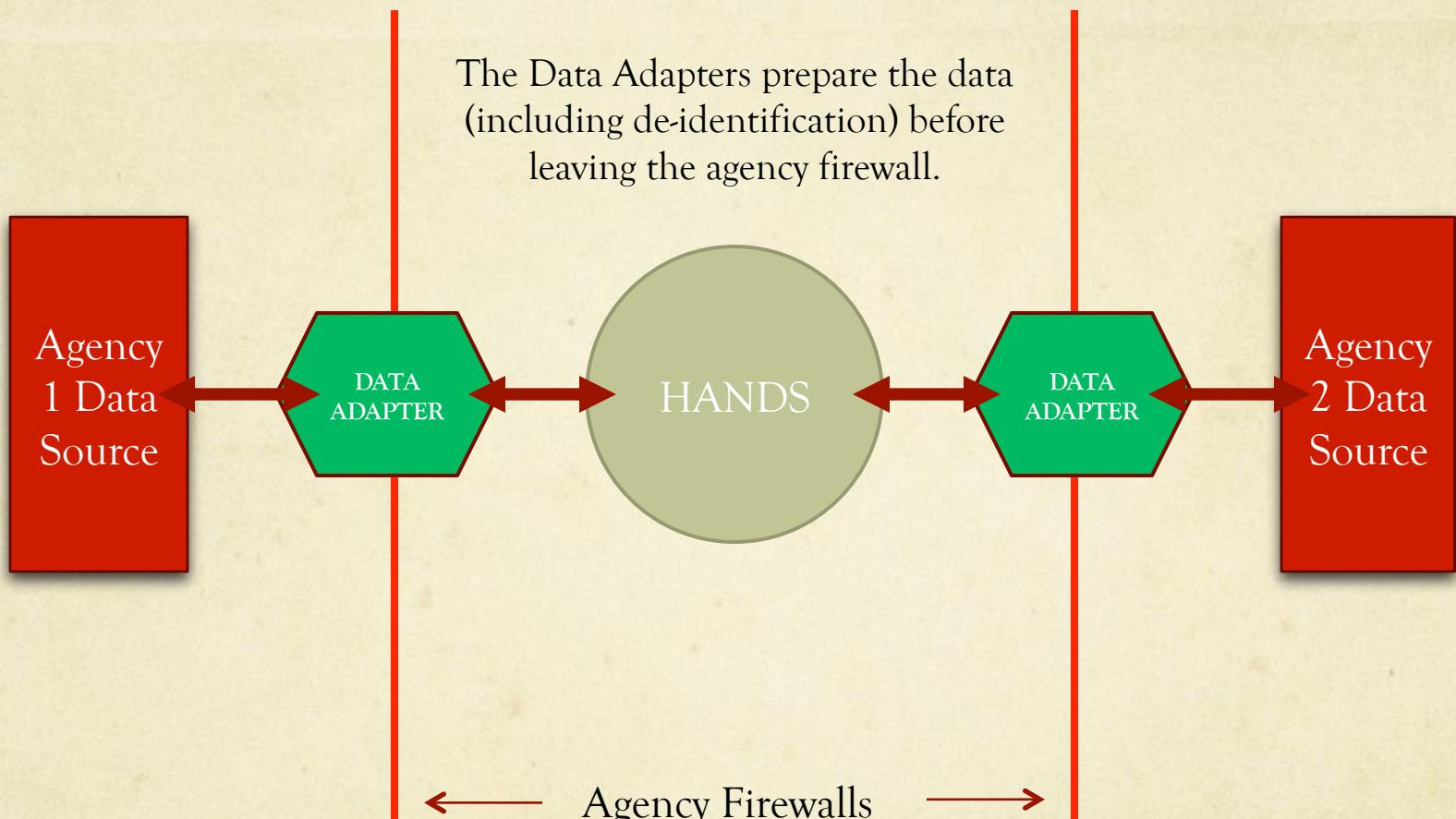
VDOE - Virtual Record Birth

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VDOE - Division of Special Education Programs Help and Information System (DOSPEHS)

How Does De-Identification Work in the HANDS System?



What do we get after creating the Linking Directory? HANDS Linking in Action!

Data being linked and pulled from multiple agency Data Adapters.

This used to take MUCH LONGER.



Welcome aaron.schroeder@vt.edu! [Log Out]

HANDS
HANDS_LINK
Tables
CHILD_IDS_DEMOGRAPHIC
CHILD_IDS_DMGS

Output	Expression	Aggregate	Alias	Sort Type	Sort Order	Grouping	Criteria	Or...	Or...

Refresh Reconnect Execute query

A large black rectangular box is positioned in the bottom right corner of the screenshot, obscuring a significant portion of the interface below the main window area.

Initial Research Study

Five Localities (Wave I)

Time period: 2006 – 2010

Sample

- From *five* localities, subsidy children = 6009
- Youngest were infants (n = 1230); Oldest 16 by end of study period (n = 26)
- 1862 with birth date between '9/30/2001' and '9/30/2004'



Initial Research Study

Subsidy to Licensing Match

- 888 vendors received subsidy payments during study time period
- 452 matched to licensing data (51%)

This match accounts for 72 % of the total Wave I children receiving subsidy during that time



Initial Research Study

Research Q 1: What type of care were parents choosing for their children with subsidy dollars?

- Substantially more parents (72.5%) enrolled their children in licensed child care compared to FFN (27.5%)
- Equally child care centers (44 %) and family child care homes (44%), with 11% in religiously-exempt placements.



Initial Research Study

Subsidy Use Patterns

- The more subsidy spells, the more likely a child enrolled in multiple programs.
- Children with more subsidy spells were slightly more likely to have longer spells.
- The most common pattern: a single spell of about 9 months in the same program



Initial Research Study

Using a cohort model (child N=3182)

- 61% received subsidy childcare from a single caretaker
- 26% had two different caretakers.
- Approximately 5% had four or more different caretakers

What we can't know from this analysis is whether these differences primarily reflect multiple simultaneous caregiving arrangements, or sequential changes.



Initial Research Study

Q2: What is the quality of care?

Quality Type	Quality Indicator	Data Source
Licensed or not	VA Child care license	VDSS DOLPHIN
License violations	Number and type of licensing violations	VDSS Risk Assessment Matrix
Center Environment	Classroom Observations	VSQI (VDSS and Virginia Interactive)
Staff Qualifications	Transcripts, professional Development records	Early Childhood Professional Registry (in development)



Child Care QI and Child Outcomes

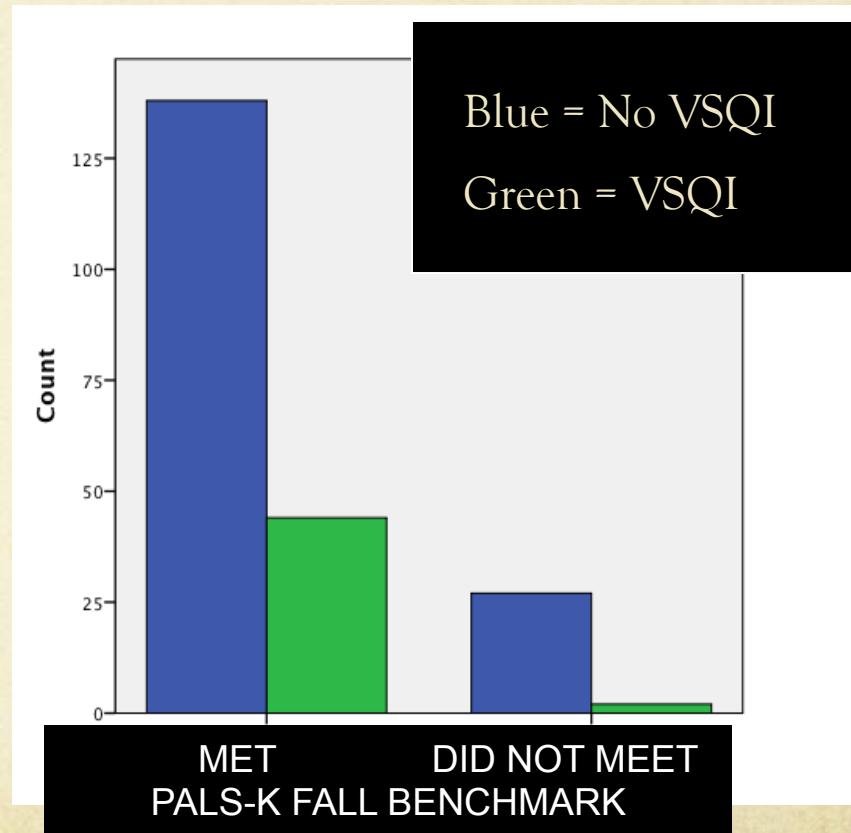
- Are children who attended a VSQI center prior to K more likely to meet kindergarten fall PALS benchmarks?

- Preliminarily, YES

94 % VSQI attendees met fall PALS-K benchmark

83% others met benchmark

(χ^2 ($N=211$) = 5.404, $p = .05$, Fisher's exact test, 2-sided).



Based on all available records of children who attended care through subsidy program between Nov07-Aug 08 (6 localities, child $N = 211$), and attended kindergarten in fall 2008.

Initial Research Study

Subsidy to Kindergarten Match

- 8/1/2006 - 7/31/2010
- Kindergarten in academic years 2006-07, 2007-08, 2008-09, and 2009-10
- 1862 with birth date between '9/30/2001' and '9/30/2004'
- 1703 successfully matched to school records (91 %)



Initial Research Study

Q3: How did children who used subsidy fare in Kindergarten?

- Children who had longer continuous spells of subsidized care attended more days of public elementary school
- Children who had longer care spells scored higher on fall Kindergarten PALS screener
- Accounting for greater attendance, this group of children was more likely to meet fall Kindergarten PALS benchmarks.



Initial Research Study

Preliminary “INSIGHTS”

- Project Child HANDS matching algorithms are capturing a very high percentage of eligible matches; supports use of the system.
- Preliminary results examining child care subsidy patterns indicate longer continuous spells of care predicts better school readiness in domains we can measure.
- If findings are replicated and robust, policy implications may be to allow longer care spells, more independent of parental employment.

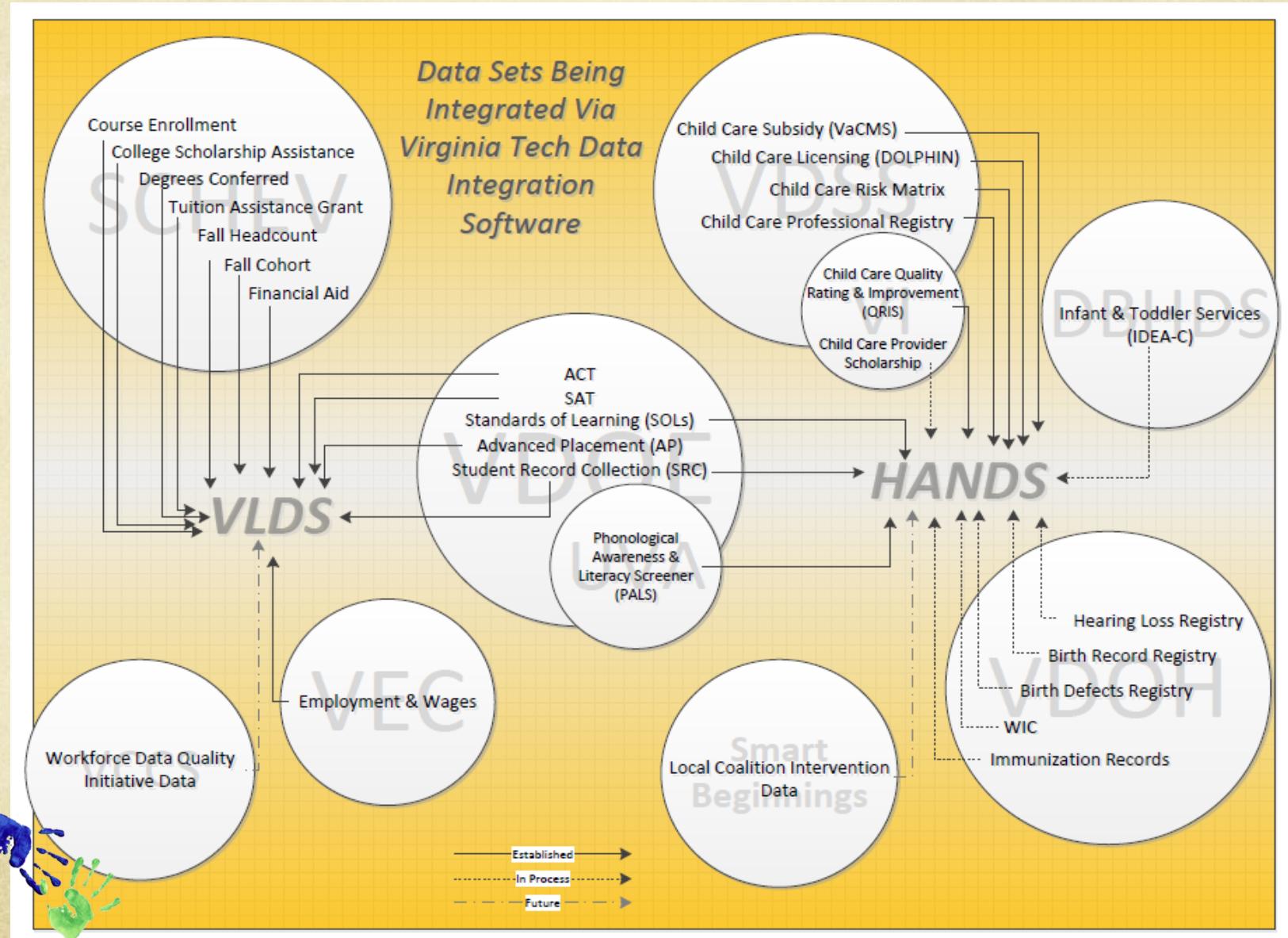


Examples of Other Policy or Evaluation Questions

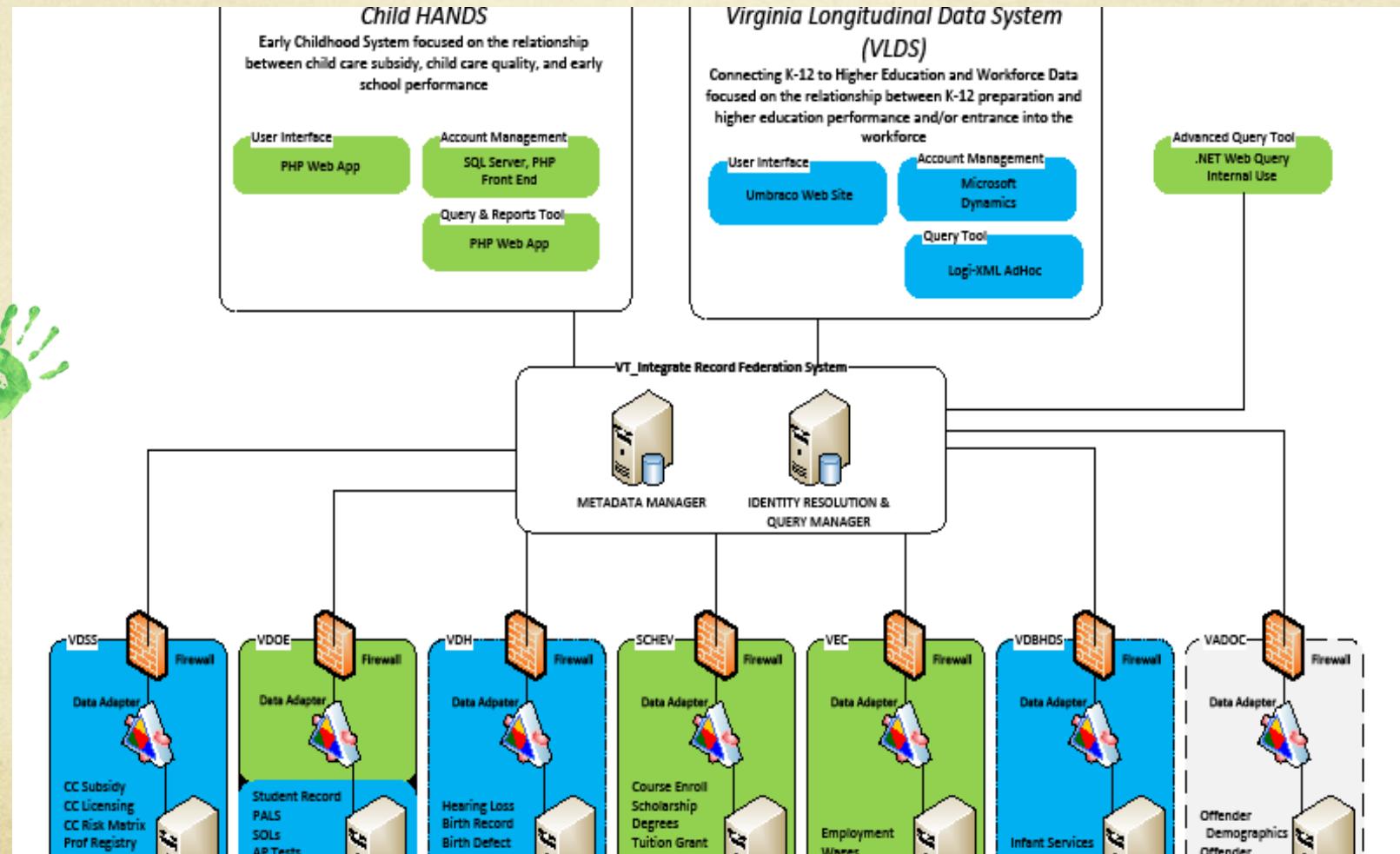
1. What are the social service trajectories and school outcomes of children born with special health care needs? (Hearing loss, birth defects)
2. What impact does early intervention have on school outcomes?
3. What interventions or programs are most helpful to children and families involved in child protective services?



Child HANs and the Virginia Longitudinal Data System



Current VLDS Integration Design



Current Status

- Governor's Early Childhood Advisory Council
 - ❖ Data Integration Task Force
 - Recommendations for use and expansion
 - Data governance
 - Research agenda
 - State-University collaborative research network
 - Funding options – varied portfolio
 - ❖ Developing reporting functions for participating agencies – e.g., 801 reports for child care assistance program, Head Start (?)



In Process: Adding New Partners

- Virginia Department of Health, Family Health Services
- Virginia Department of Behavioral Health and Developmental Services, Early Intervention
- Virginia Early Childhood Foundation
- VLDS partners: SCHEV, Virginia Employment Commission



Example of Research that Child HANDS can Facilitate

Overview Logic Model of Policy Research Question,
“What are the outcomes associated with different programs or interventions?”

Example: Newborn Hearing Screening and Subsequent Referral for Services

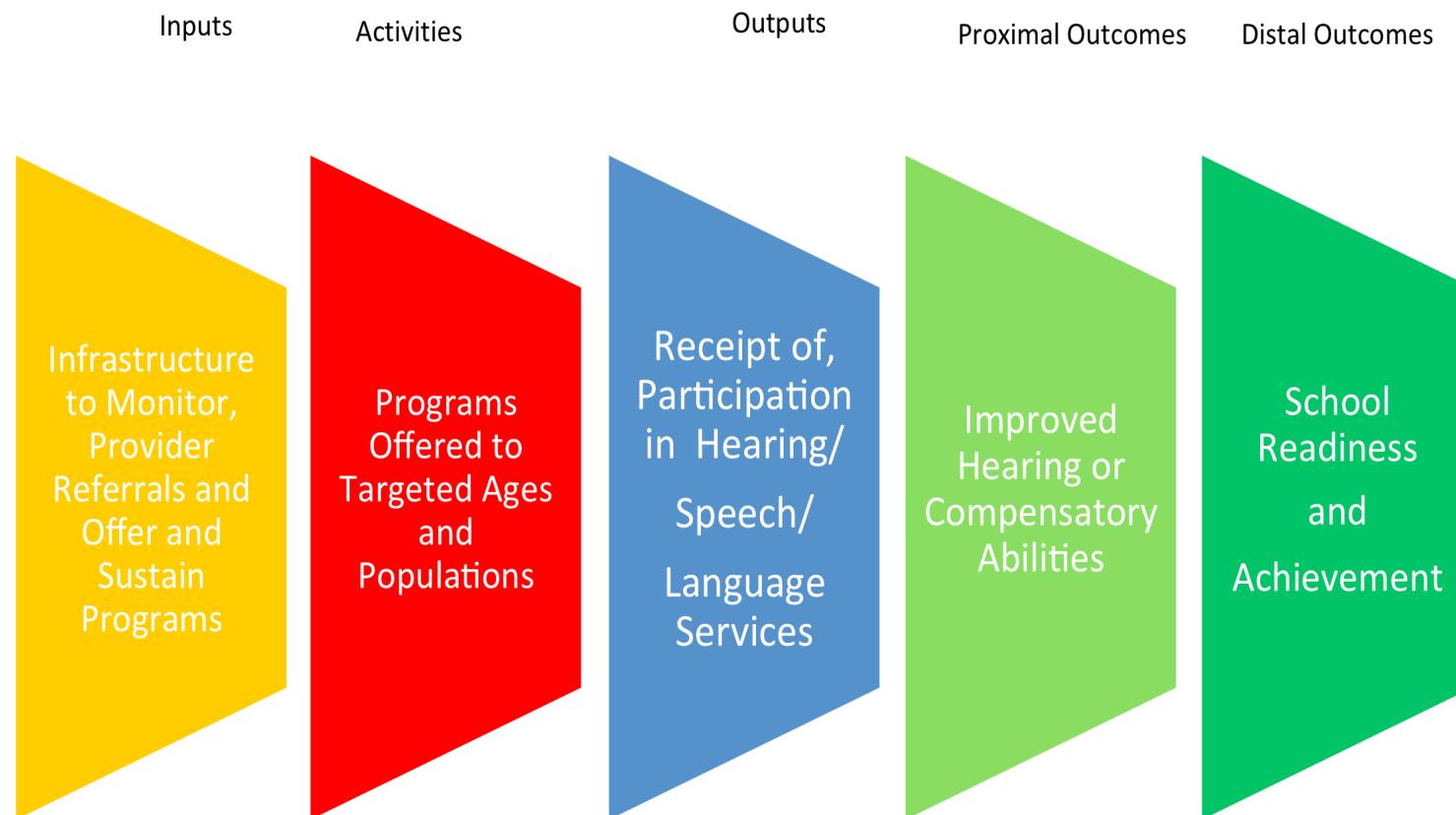
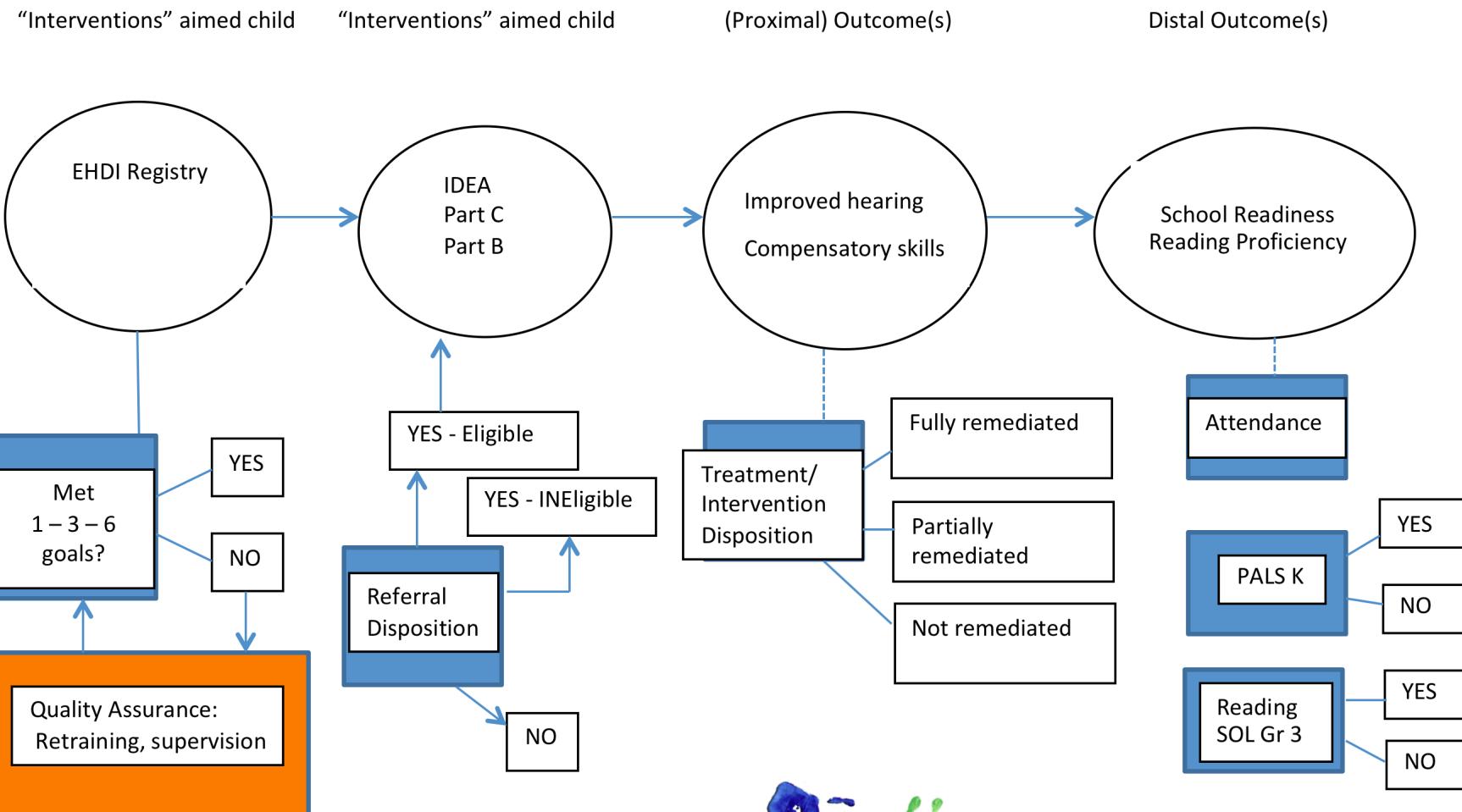


Figure 1. Conceptual Model of Research Question, “What are the outcomes associated with different programs/interventions?” Example: Newborn Hearing Screening Trajectories



Databases, Systems Programs, and Data Owners Needed to Address Questions

Q1. What are the outcomes associated with different programs/interventions?

Program	Intended Outcome(s)	Lead Agency/Data Source	Outcome(s) Data Source(s)
Hearing Loss Registry	Referral/services	VDOH/Hearing Loss Registry	Receipt of (Type) Services (Part B, Part C, IEP, other?); dosage
Hearing Loss Registry and EI	Services that improve hearing/ Speech and language	VDOH/VDBHDS/VDOE IDEA Part B, Part C	Elementary school achievement/SRC, PALS, SOLs

Secondary or follow-up questions:

Q1a. What family or community access factors make it more or less likely a child will receive hearing services?

Q1b. Are there additional programs (such as Head Start, child care subsidy receipt, VPI) that increase odds of children with hearing loss at birth doing well in elementary school?

Q1c. Are there regional or local difference in children's outcome trajectories?



Bringing Service and Research Dollars into Virginia

With proper infrastructure support, Project Child HANDS, together with the VLDS, has the potential to bring active foundation and other funding into the Commonwealth.

Example: Project LAUNCH (SAMHSA RFP SM-12-009)
**Cooperative Agreements for Linking Actions for Unmet
Needs in Children's Health**
(Up to \$850,000 per year, 5 years, no match)

Example: **Managing and Learning from Activities in
Payment and Delivery System Reform**
(Robert Wood Johnson Foundation)



Project Child HANDS Partners/Advisors

Virginia Department of Social Services

- ❖ Barb Newlin, Kathy Gillikin, Zelda Boyd, Todd Areson (ret.), Erik Beecroft (until June, 2013)

Virginia Department of Education

- ❖ Bethann Canada, Deborah Jonas (until June, 2012)
Thomas Santangelo

Virginia Early Childhood Foundation

- ❖ Kathy Glazer, Angela Sullivan



Virginia Department of Health, Family Health Services

- ❖ Dev Nair, Derek Chapman, Christopher Hill

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THANK YOU!



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We also thank Wave I and II local departments of social services and school divisions for their input, feedback and data with which to develop and test Project Child HANDS.

Technical Details



Getting Data Ready for “De-Identified Federation”

What the Data Adapter Does

Name Cleaning

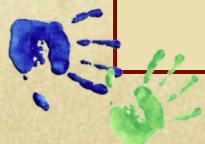
De’Smith-Barney IV

Remove Suffix

De’Smith-Barney

Remove Symbols

DeSmithBarney



Name Encoding

DeSmithBarney

Substitution Cipher

Order Hashing

C57S78XCEBF9WECP2AA9DK59N1CO27QBE54HFD

*Substitution Alphabet –
Dynamically Generated using
Hashing Key (below)*

YDXWKQTAGOLCNSVEFHMRJPBZUI

*Hashing Key – Dynamically
Generated and sent from
HANDS*

b164f11d-aa37-44ca-93c3-82d3e0155061

**CLEANED &
ENCODED for
TRANSPORT**

Cleaned and Encoded Matching Data (Internal ID, First and Last Name)

INTERNAL_ID is the same
LAST_NAME is NOT

Many agencies DO NOT have an Index of unique individuals. There can be many representations of that individual.

Statistical Log Analysis and Reduction

We dynamically build a new “virtual” record made up of “most likely” demographics



Probabilistic Linkage Process (Creating a Linking Directory)

(After we have a unique person index for each agency dataset)

Blocking

m and u Parameter Calculation

Matching-Column Weight Calculations

Match Scoring

Linkage Determination and addition to Linking Directory

- Linkage Determination – A Cutoff score needs to be set for each blocked comparison, below which a link is not accepted as a real “link”
- The best method of establishing this cutoff is for the system operator to work with a content-area expert to determine the peculiarities of data for that content-area
- In some data sets it may be very unlikely that a birthdate was entered incorrectly, while in another, it may happen very regularly – a computer can not automatically know this
- Once these cutoffs are set, they don’t need to be changed unless something drastic occurs to change the nature of the dataset

