# The Vermont Parent Infant Program (PIP) Experience With Language  Assessments For Deaf, Hard of Hearing and DeafBlind Children Birth to 3 Years of Age

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# VTEHDI and the Parent Infant Program

Part C Program in Vermont: All children who are Deaf, Hard of Hearing or DeafBlind qualify for services.

Providers: Qualified, specialized and licensed
- Teachers of the Deaf and Hard of Hearing
- Speech Language Pathologists
- Educational Audiologists

# Partnering with ĒLO at the University of Colorado

Training: Allison Sedey trained all providers June 2021 and April 2023

Language Assessments:
- SKI-HI Language Development Scale (LDS)
- MacArthur-Bates Communicative Development Inventories (MB-CDI)
- Developmental Assessment of Young Children (DAYC-2)

Timing of Assessments in Vermont:
- 8 months of age
- 14 months of age
- 20 months of age
- 26 months of age
- 32 months of age

# Vermont Goals For Language Assessments

1. Analyze the language acquisition and developmental milestone data for example by region, race/ethnicity, gender, family structure, socio-economic status, family structure, parent education.

2. Identify services to enhance and improve language acquisition: Results shared with families.

3. Identify EHDI-IS database enhancements.

4. Annual Report: Aggregate data including demographics to be shared with key partners.

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# Percentage of Language Assessments by Year: Total = 72 assessments
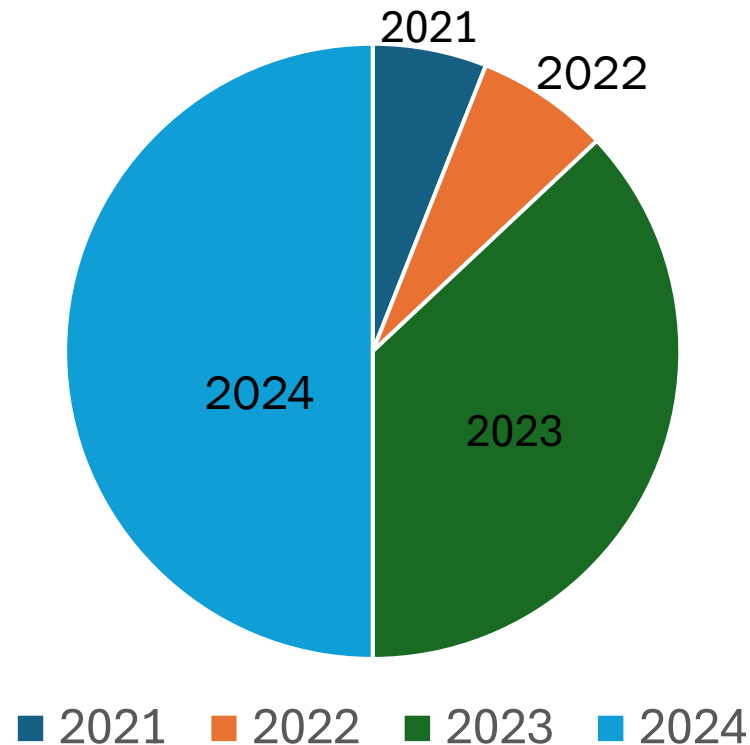
# Demographics: Vermont and ĒLO

| Demographic Characteristic | UVM | ĒLO |
|---|---|---|
| Hispanic ethnicity | 10% | 38% |
| White race | 90% | 83% |
| English is the primary language of the home | 100% | 85% |
| Passed newborn hearing screening | 23% | 6% |
| Acquired loss | 21% | 4% |
| Bilateral: Mild/mod hearing levels | 76% | 62% |
| Unilateral: Mild/mod hearing levels | 71% | 42% |
| Primarily spoken language used with the child | 80% | 85% |
| Deaf/hh adult(s) in the home use sign language | 0% | 28% |
| Bilateral children not using hearing technology | 33% | 20% |
| Number of indiv intervention sessions per month | 5.8 | 4.4 |
| Number of min of indiv intervention per month | 340 | 250 |

# Sex, Race and Ethnicity

| Sex | UVM | ĒLO |
|-----|-----|-----|
| Boy | 49% | 54% |
| Girl | 51% | 46% |

| Ethnicity | UVM | ĒLO |
|-----------|-----|-----|
| Not Hispanic | 90% | 62% |
| Hispanic | 10% | 38% |

| Race | UVM | ĒLO |
|------|-----|-----|
| White | 90% | 83% |
| Native/American Indian | 0% | 1% |
| Hawaiian/Pacific Islander | 0% | <1% |
| Black/African American | 0% | 6% |
| Asian | 0% | 3% |
| Two or more races | 10% | 6% |

# Disabilities and Audiology Variables

| Additional disabilities thought to interfere with speech/language development | UVM | ĒLO |
|---|---|---|
| No additional disabilities | 74% | 75% |
| Has additional disabilities | 26% | 25% |

| Laterality | UVM | ĒLO |
|---|---|---|
| Bilateral | 69% | 66% |
| Unilateral | 31% | 34% |

| Newborn hearing screening result | UVM | ĒLO |
|---|---|---|
| Referred | 74% | 89% |
| Passed | 23% | 6% |
| Not screened | 3% | 3% |
| Result unknown | 0% | 1% |

| Onset of hearing difference | UVM | ĒLO |
|---|---|---|
| Congenital | 69% | 92% |
| Acquired | 21% | 4% |
| Unknown | 10% | 5% |

# Hearing Levels: Bilateral and Unilateral Hearing Differences

| Hearing Level (bilateral) | UVM | ĒLO |
|---|---|---|
| Mild | 47% | 41% |
| Moderate | 29% | 22% |
| Moderate-severe | 6% | 12% |
| Severe | 0% | 8% |
| Severe or profound | 18% | 9% |
| Profound | 0% | 9% |

| Hearing Level (unilateral) | UVM | ĒLO |
|---|---|---|
| Mild | 43% | 19% |
| Moderate | 29% | 23% |
| Moderate-severe | 14% | 24% |
| Severe | 0% | 14% |
| Severe or profound | 14% | 8% |
| Profound | 0% | 11% |

# Hearing Technology: Children with Bilateral Hearing Differences

| Type of Amplification (bilateral) | UVM | ĒLO |
|---|---|---|
| Hearing aids | 44% | 64% |
| Cochlear implant | 11% | 16% |
| Cochlear implant + hearing aid | 4% | 2% |
| Bone conduction aid | 7% | 8% |
| None | 33% | 10% |

# Communication Mode

| Communication Mode | UVM | ĒLO |
|---|---|---|
| Primarily spoken language | 80% | 85% |
|     Spoken language only | 23% | 41% |
|     Spoken language w/ very occasional sign | 56% | 44% |
| Sign + spoken language | 20% | 14% |
| Sign language only | 0% | 1% |

# DAYC-2: Mean Percentiles - No additional disabilities (mean for typically developing hearing children = 50$^{th}$)

| Subscale | UVM Bilateral | ĒLO Bilateral |
|---|---|---|
| Cognitive | 52 | 57 |
| Communication | 40 | 43 |
| Receptive | 39 | 40 |
| Expressive | 41 | 45 |
| Social-Emotional | 58 | 61 |
| Physical | 33 | 45 |
| Gross Motor | 33 | 49 |
| Fine Motor | 36 | 40 |
| Adaptive Behavior | 49 | 53 |

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# DAYC-2: Percentage in the Average Range (no additional disabilities)

| Subscale | UVM Bilateral | ĒLO Bilateral |
|---|---|---|
| Cognitive | 89% | 95% |
| Communication | 76% | 78% |
| Receptive | 72% | 74% |
| Expressive | 79% | 81% |
| Social-Emotional | 95% | 96% |
| Physical | 84% | 96% |
| Gross Motor | 75% | 92% |
| Fine Motor | 100% | 97% |
| Adaptive Behavior | 95% | 92% |

# MacArthur-Bates CDI: Expressive Vocabulary (no additional disabilities)

### Bilateral Hearing Difference: Percentiles

| Words produced | UVM Bilateral | ĒLO Bilateral |
|---|---|---|
| Mean | 22nd | 26th |
| % in average range (≥ 10th %ile) | 67% | 65% |

### Unilateral Hearing Difference: Percentiles

| Words produced | UVM Unilateral | ĒLO Unilateral |
|---|---|---|
| Mean | 33rd | 34th |
| % in average range (≥ 10th %ile) | 80% | 81% |

# MacArthur Words and Sentences (CA = 19 to 30 months) – no addit disab

*Percentiles: Irregular Nouns and Verbs*

| Irregular Nouns & Verbs | UVM Bilateral | ĒLO Bilateral |
|---|---|---|
| Mean | 25th | 28th |
| % in average range (≥ 10th %ile) | 79% | 85% |

*Percentiles: Mean of the 3 Longest Utterances (M3L)*

| Mean of 3 longest Utterances | UVM Bilateral | ĒLO Bilateral |
|---|---|---|
| Mean | 25th | 26th |
| % in average range (≥ 10th %ile) | 69% | 61% |

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# SKI-HI Language Development Scale (no additional disabilities)

*SKI-HI Language Development Scale: Median Language Quotient*

| Subscale | Bilateral | | | Unilateral | |
|---|---|---|---|---|---|
| | UVM | ĒLO | | UVM | ĒLO |
| Receptive language | 94 | 95 | | 100 | 103 |
| Expressive language | 88 | 88 | | 100 | 100 |

*Percentage of children with a language quotient at or above 80*

| Subscale | Bilateral | | | Unilateral | |
|---|---|---|---|---|---|
| | UVM | ĒLO | | UVM | ĒLO |
| Receptive language | 69% | 73% | | 95% | 78% |
| Expressive language | 62% | 64% | | 91% | 76% |

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# SUMMARY

Measures in which children from UVM performed *similarly* to children from other programs participating in ELO

**DAYC-2: Mean percentile score and % of children in the average range**
- Expressive Language
- Receptive Language
- Social-Emotional
- Fine Motor
- Adaptive Behavior

**MacArthur mean percentile scores:**
- Expressive vocabulary
- Irregular nouns and verbs
- Sentence length

**MacArthur % of children in the average range:**
- Expressive vocabulary

**SKI-HI LDS mean language quotient:** Bilateral and Unilateral

**SKI-HI LDS % of children in the average range:** Bilateral

# SUMMARY

Measures in which children from UVM performed *lower* than children from other programs participating in ELO

**DAYC-2: Mean percentile score and % of children in the average range**
- Cognitive
- Gross Motor

**MacArthur: % of children in the average range**
- Irregular Nouns and Verbs

# SUMMARY

Measures in which children from UVM performed *higher* than children from other programs participating in ELO

**MacArthur: % of children in the average range**
- Sentence length

**SKI-HI LDS: % of children in the average range**
- Unilateral

# A SPECIAL THANK YOU

ALLISON SEDEY

EDUCATIONAL LANGUAGE OUTOMES

UNIVERSITY OF COLORADO

# Questions....





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