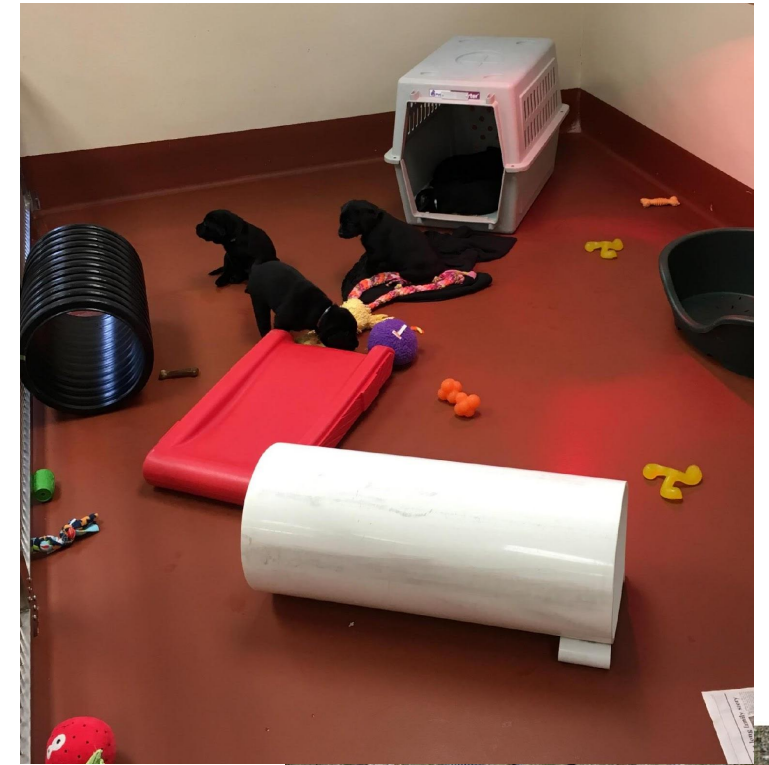
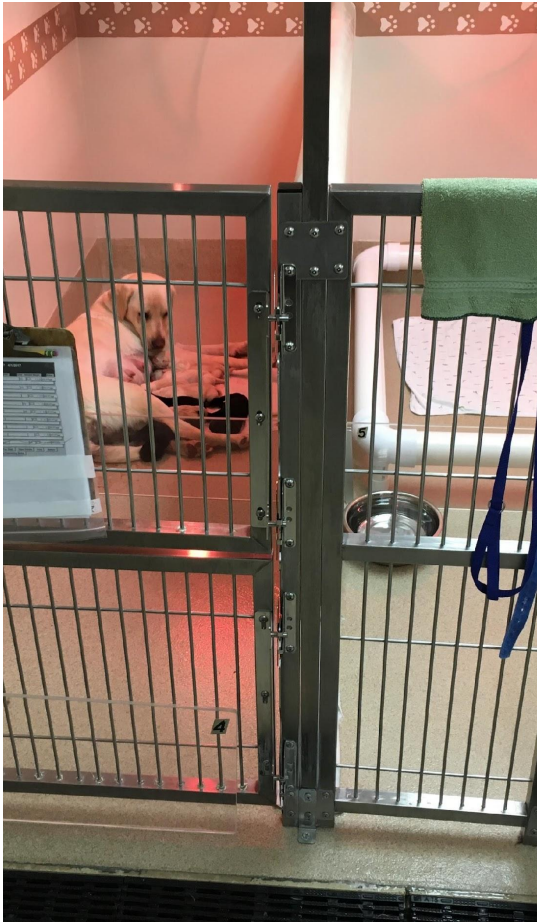


# Critical Periods Of Socialization And Impact On Temperament Of The Dog

Jane Russenberger, BS  
IWDA Breeder's Workshop  
May 1-2, 2023  
Vancouver Canada







## Whelping Kennel Passive Birth- 6.5 weeks

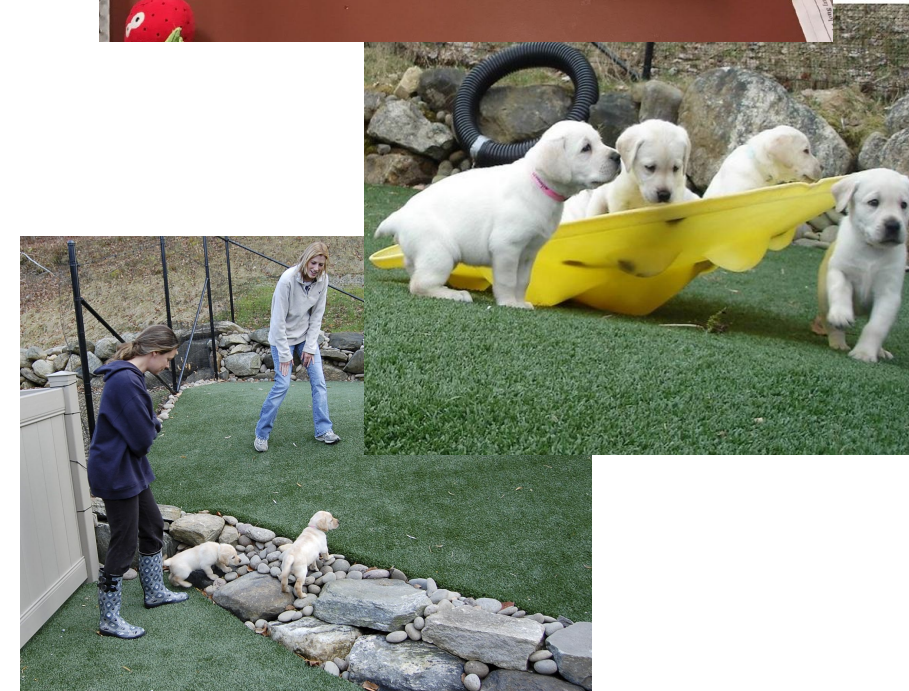
3 progressive pens

- 1-3 weeks
- 3-5 weeks
- 5-6.5 weeks

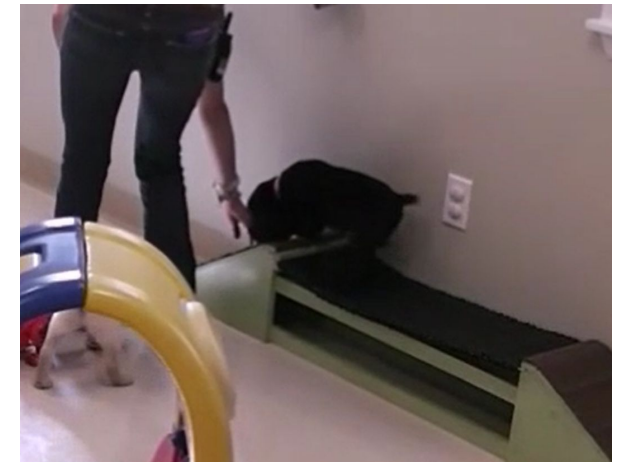
Outdoor play area



Noises, crates, early potty training  
textures, objects, massage,  
Motor development



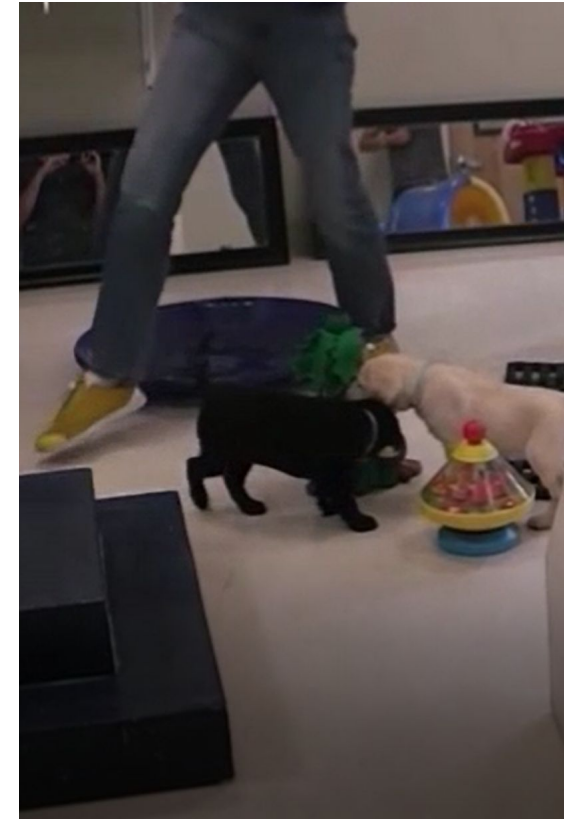
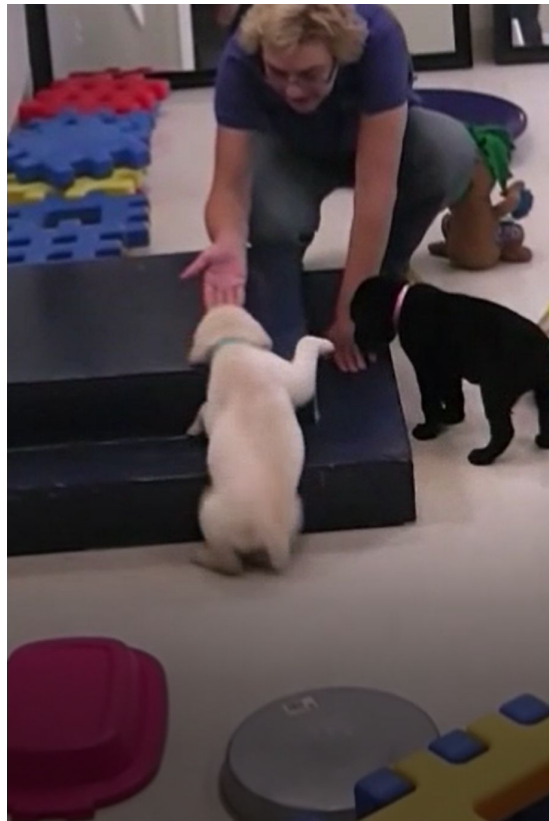




## Early Socialization Room

Minimum every other day  
Passive and active activities

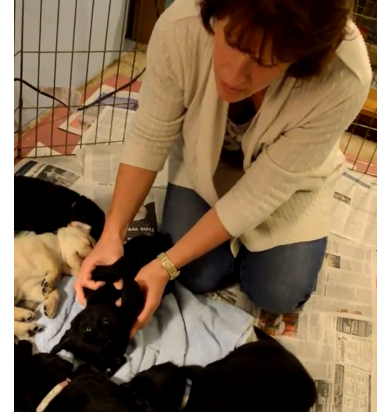
- Strangers
- Novelty- noises, objects
- Body handling
- Early training for sit, down
- Motor control





# Home Litter Care

- Take litter 1 week old with Mom until about 6.5 weeks
- Trained and supported by skilled staff
- Provide husbandry care at home
- Daily socialization protocol- progressive age-appropriate
- Adhere to vaccination and exposure risk protocol

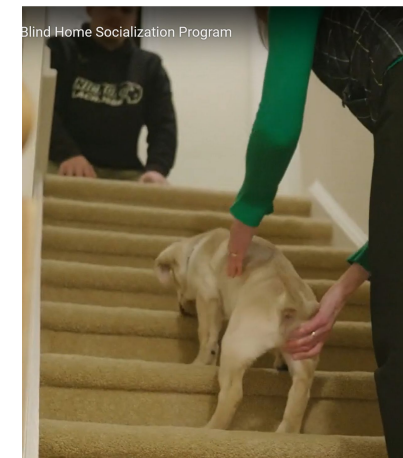


Volunteers provide care  
and socialization

Guiding Eyes provides  
Equipment  
Instruction  
Support

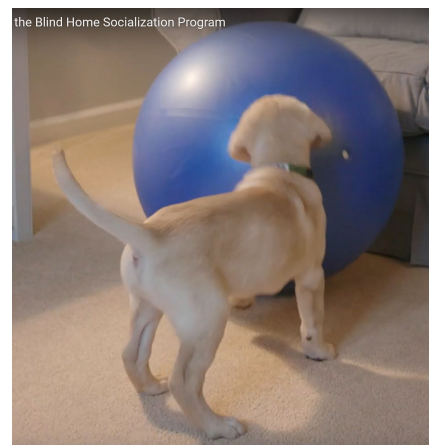






## Home Socialization 3-4 Events- different homes

Trained families, equipment provided  
6.5 weeks- placement with puppy raiser  
3-5 days, 2 siblings together





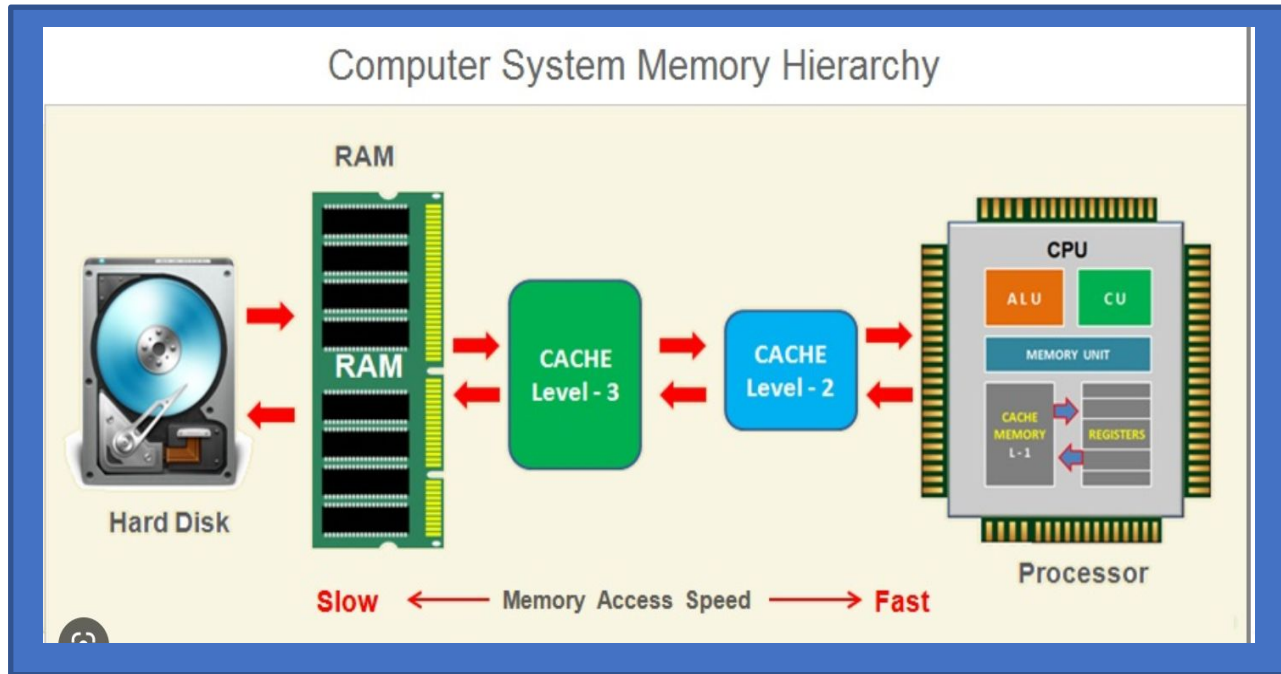


**Puppy Pavilion ES Events**  
7 weeks to Placement With Puppy Raisers  
Passive socialization in kennel pens  
Daily progressive socialization led- supervised by handler  
Pups alternate between 3 days in home socialization and Pavilion

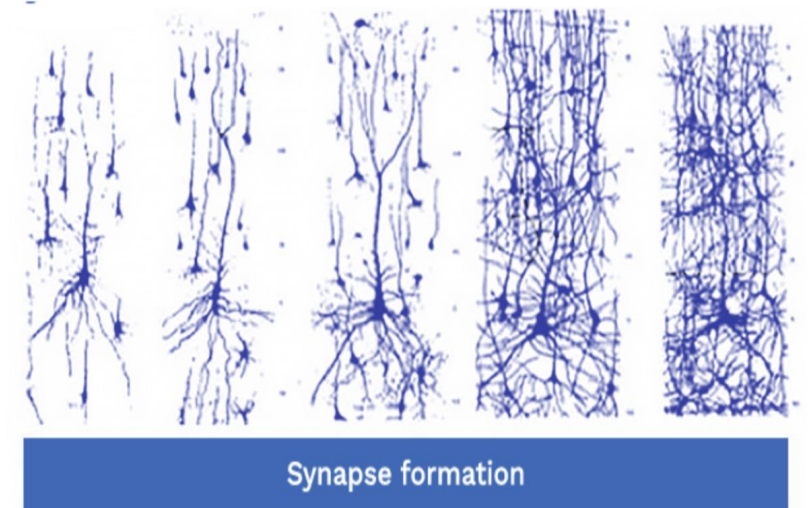




# Time of Developing Connections- Brain processing, speed and memory



More synapses- More ability

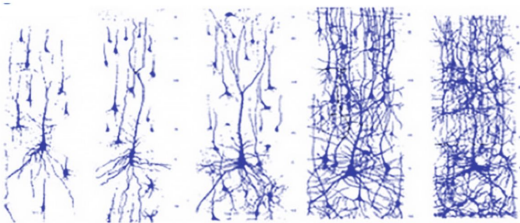

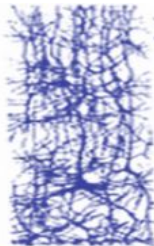
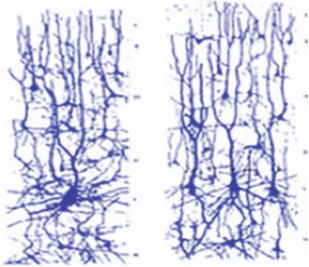


<https://embrace-autism.com/synaptic-growth-synesthesia-and-savant-abilities/>



# Building the Connections

## Brain Capacity for Processing for Learning and Memory

<p>Dogs</p> <p>50% Occurs in 1st 7 wks</p>	<p>8- 16 weeks</p>	<p>4 mo- 10 mo</p>
<p>Foundation for future brain development established</p>	<p>Motor, visual, auditory perception</p>	<p>Emotional regulation</p>
<ul style="list-style-type: none"> <li>The environment strengthens pathways</li> </ul> <div data-bbox="270 839 787 1102">  <p>Synapse formation</p> </div> <p><a href="https://embrace-autism.com/synaptic-growth-synesthesia-and-savant-abilities/">https://embrace-autism.com/synaptic-growth-synesthesia-and-savant-abilities/</a></p> <ul style="list-style-type: none"> <li>Pathways not used are eliminated</li> </ul> <div data-bbox="919 1039 1082 1275">  <p>Eliminated</p> </div>	<ul style="list-style-type: none"> <li>Repetitive and consistent stimulation builds more connections and makes the pathways permanent.</li> </ul> <div data-bbox="2153 586 2321 886">  <p>Retained</p> </div> <ul style="list-style-type: none"> <li>Pruning (Removal) of unused pathways</li> </ul> <div data-bbox="2084 1011 2390 1335">  <p>Synaptic pruning</p> </div>	



# Types of Learning During Early Development





# HIGH ALERT – CANINE PARVO VIRUS OUTBREAK

2017 -Guiding Eyes - Started in Puppy Socialization Kennel

Litter of Pups from Home Litter Care Exposed Just Prior to Return

## PARVOVIRUS

### A DEADLY VIRUS

#### How did my dog get Parvovirus?



**Unvaccinated dogs** poop out millions of virus particles in each bowel movement.



Virus particles are **very stable** in the soil – they resist heat and cold.



Virus particles present in soil can stay there for **years**.



**Unvaccinated dogs** who walk on the contaminated soil, lick their feet afterwards and ingest the virus.

#### Symptoms

- Vomiting (watery, foamy, milky or slimy)
- Diarrhea (often bloody, foul smelling)
- Appetite loss
- Listless or depressed attitude
- Often have a dull, glassy-eyed stare

If you notice any of these signs, seek medical attention **immediately**.

Symptoms come on so quickly that many owners think their puppy has been poisoned.

#### Prevention

- Don't wait until it is too late** – even if your dog does not leave your yard.
- This virus can be picked up on your shoes and walked into your yard where it can live for years in the soil
  - Puppies and young adults are at a higher risk – you **MUST** vaccinate your puppy before exposing them to any outside areas
  - Puppies need a series of vaccinations to develop immunity
  - Adult dogs need yearly vaccinations to maintain immunity

30 Pups  
Quarantined for  
10 weeks  
2 died

To prevent  
transmission –  
268 puppies  
(9 litters)  
had  
impacted  
socialization

July 2017						
M	Tu	W	Th	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

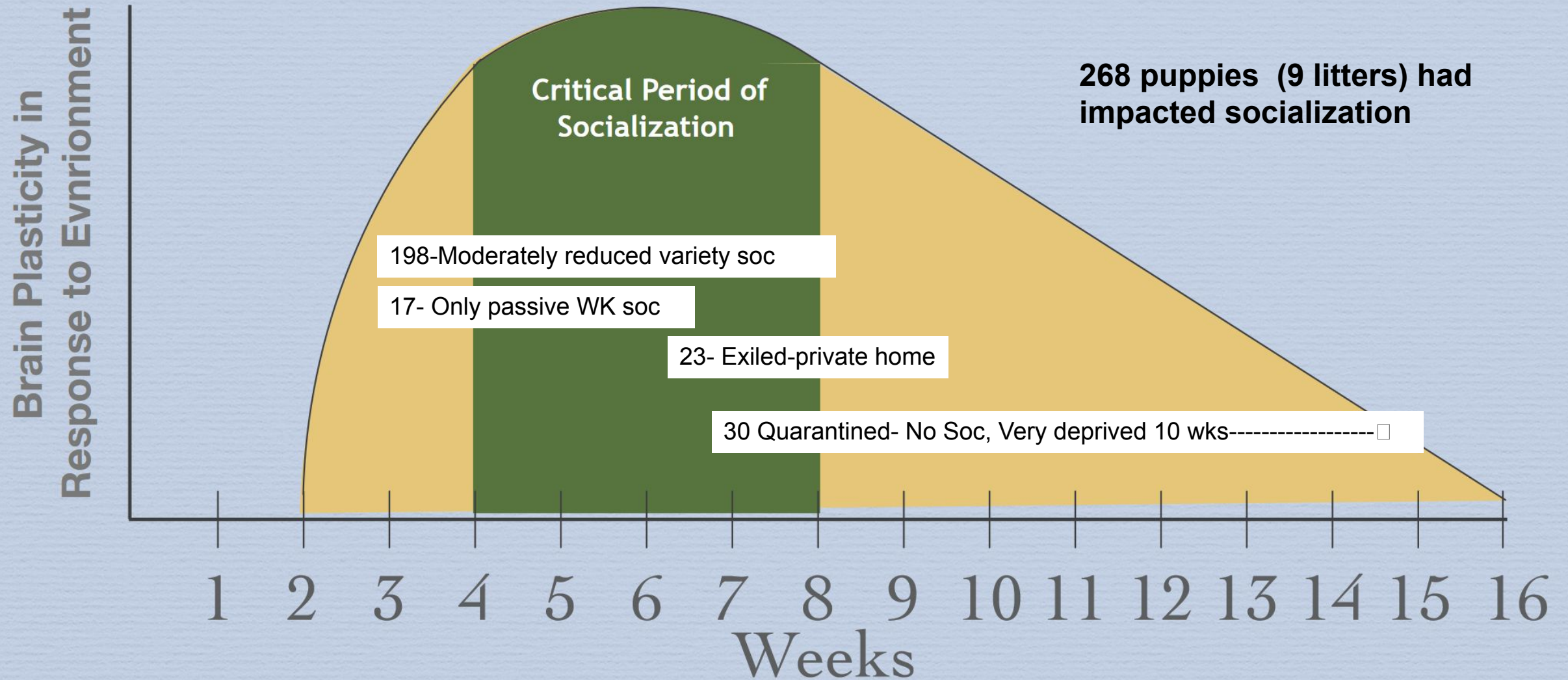
August 2017						
M	Tu	W	Th	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

September 2017						
M	Tu	W	Th	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

<https://claremontproperty.co.za/uncategorized/high-alert-canine-parvo-virus-outbreak/>

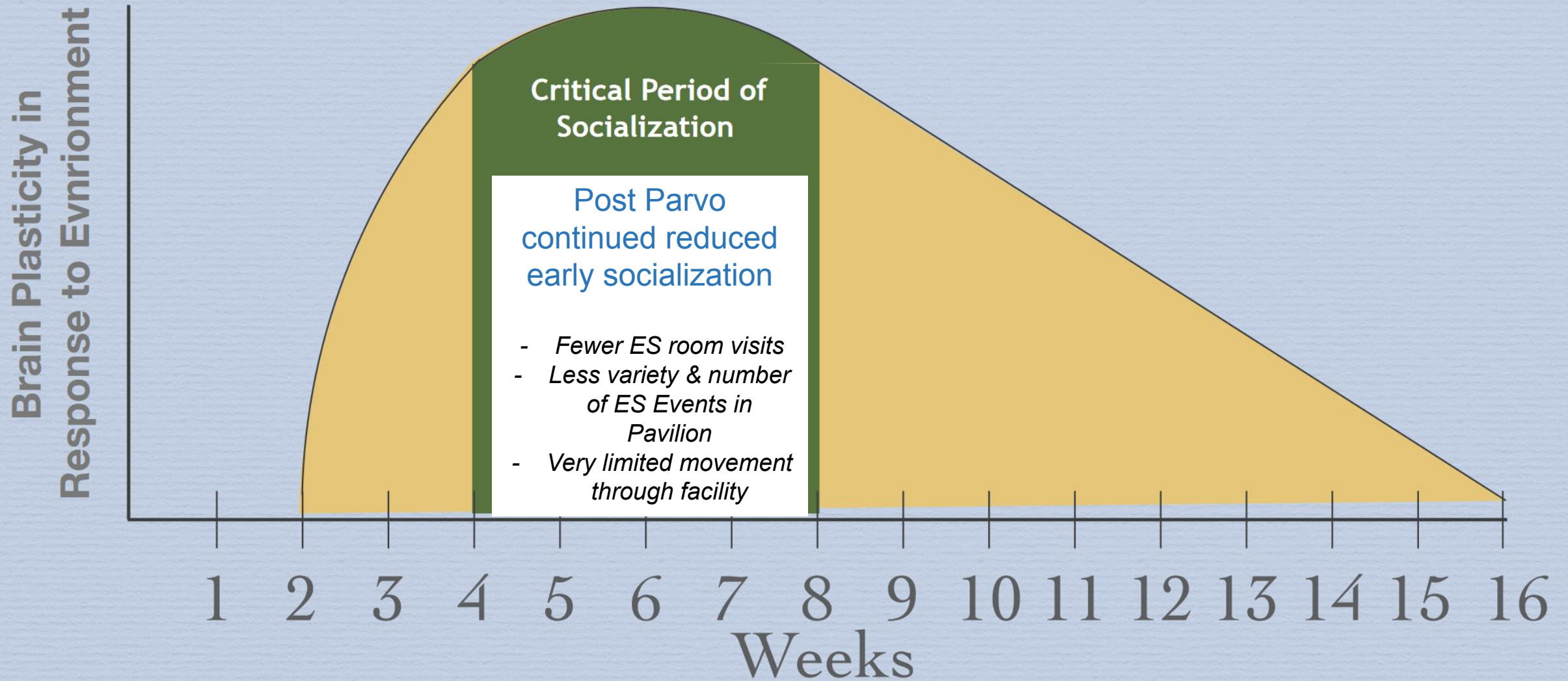


# The Primary Critical Period of Socialization



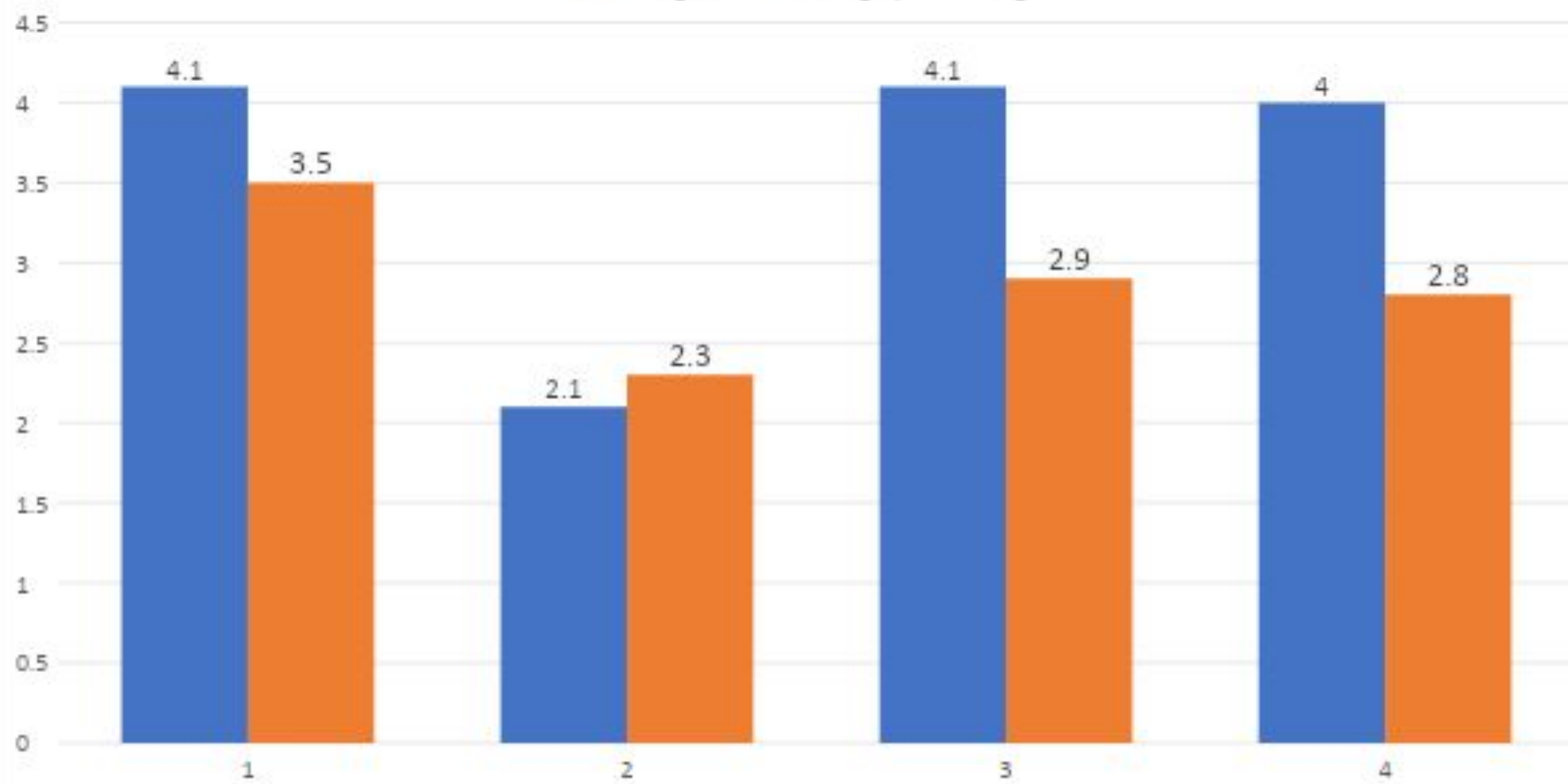


# The Primary Critical Period of Socialization



## Average HS and Early Socialization Events By DOB

■ Average HS ■ Average pretraining





**Question: How might this  
decreased early socialization  
have impacted these dogs?**

**Bigger question: How important is  
early socialization  
for raising a well-adjusted guide dog?**

# Behavior Checklist Scoring System

**Edit Behavior Checklist For Macallan (Max) 5MM15**

Instructor:  Date:  Type of evaluation:

Absent VMild Mild Mod Severe N/A

1. ANXIOUS IN UNFAMILIAR LOCATIONS - Initially anxious during first visits to unfamiliar locations. Exhibited as increased or inhibited activity, cautious and/or less responsive or focused	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
2. NOISE SENSITIVITY - Startle, tense body language, hurries, escape, or displacement behaviors when exposed to noise such as car horns, hair dryers, vacuums, banging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
3. FEAR OF NOVEL OBJECTS - Fearful, avoidant or suspicious of unfamiliar objects which could be anything, but common examples are plastic bags, statues, yard equipment, balloons, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
4. FEAR OF UNDERFOOTINGS - Fearful, nervous, apprehensive of various walking surfaces: slippery floors <input type="checkbox"/> gratings <input type="checkbox"/> other <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
5. FEAR OF DOGS - Inhibited response to other dogs on leash or off leash, such as low body posture, pulling back, head low, apprehensive, avoidant, hackles, withdraws, reluctant to proceed, watches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
6. FEAR OF STAIRS - Hurries, refuses or hesitant on stairs <input type="checkbox"/> open back stairs <input type="checkbox"/> open grate stairs <input type="checkbox"/> up stairs <input type="checkbox"/> down stairs <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
7. FEAR OF TRAFFIC - Tense body language, tail low or tucked, change in activity level, startle, retreat, escape in response to sight and sounds of vehicle traffic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
8. SEPARATION ANXIETY - Restless, vocalizes, and/or becomes destructive when left alone; in crate <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
9. HYPER-ATTACHMENT - Overly attached to primary handler, seeks to return to primary handler when handled by others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
10. FEAR OF STRANGERS - Fearful, nervous, apprehensive with strangers, cautious, avoidant, hackling, slow approach, keying in, barking, growling, escape	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
11. BODY HANDLING CONCERN - Avoidant, anxious, fearful and/or aggressive when handled for non-invasive activities in a manner typical of a vet exam, grooming and/or nail clipping <input type="checkbox"/> Nails <input type="checkbox"/> Restraint <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
12. RETREATS WHEN REACHED FOR - Moves head or face away when reached for by familiar persons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>

5 point scale for most

5 Absent

4 Very Mild

3 Mild

2 Moderate

1 Severe



Reason For Release

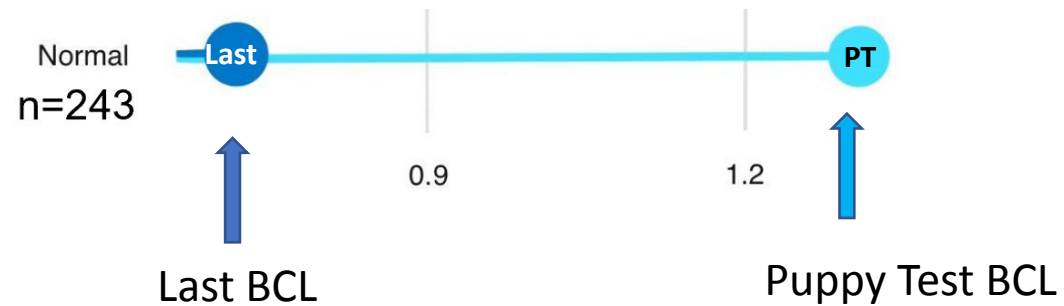


## Scoring BCL - general concept

5	Absent	<ul style="list-style-type: none"><li>• Relaxed or rare stress signals</li></ul>
4	Very Mild	<ul style="list-style-type: none"><li>• Very mild stress signals</li><li>• Slightly less able to respond without support</li><li>• Improves when repeat</li></ul>
3	Mild	<ul style="list-style-type: none"><li>• Mild stress signals</li><li>• Mild loss of responsiveness even with support</li><li>• Improves when repeat</li></ul>
2	Moderate	<ul style="list-style-type: none"><li>• Moderate stress signals</li><li>• Moderate loss of responsiveness even with support</li><li>• Still stressed with repeat</li></ul>
1	Severe	<ul style="list-style-type: none"><li>• Severe stress signals</li><li>• Very slow or can't respond even with support</li><li>• Usually worse with repeat</li></ul>

Unproductive

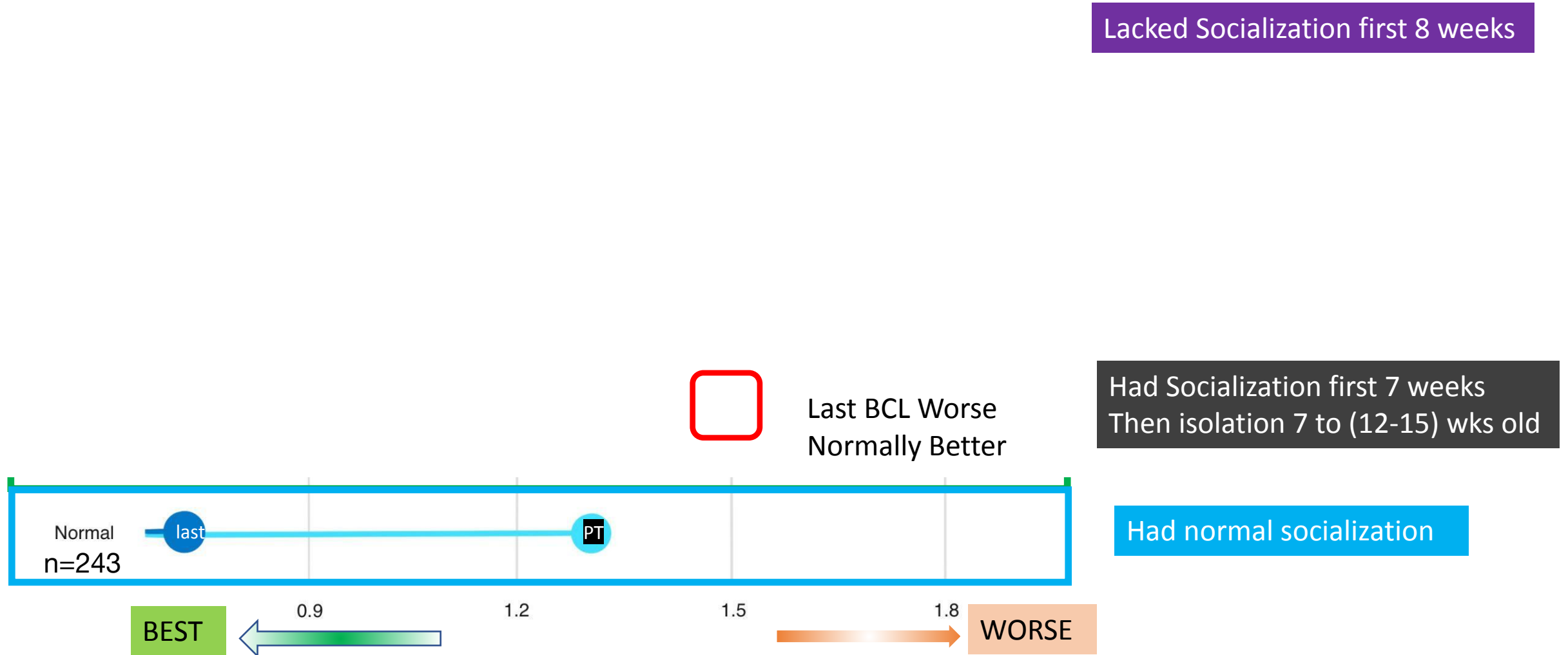
# Generally Total Number of 1& 2 Scores Decrease As Pup Matures



Average number of low (1&2)= moderate & severe scores per puppy

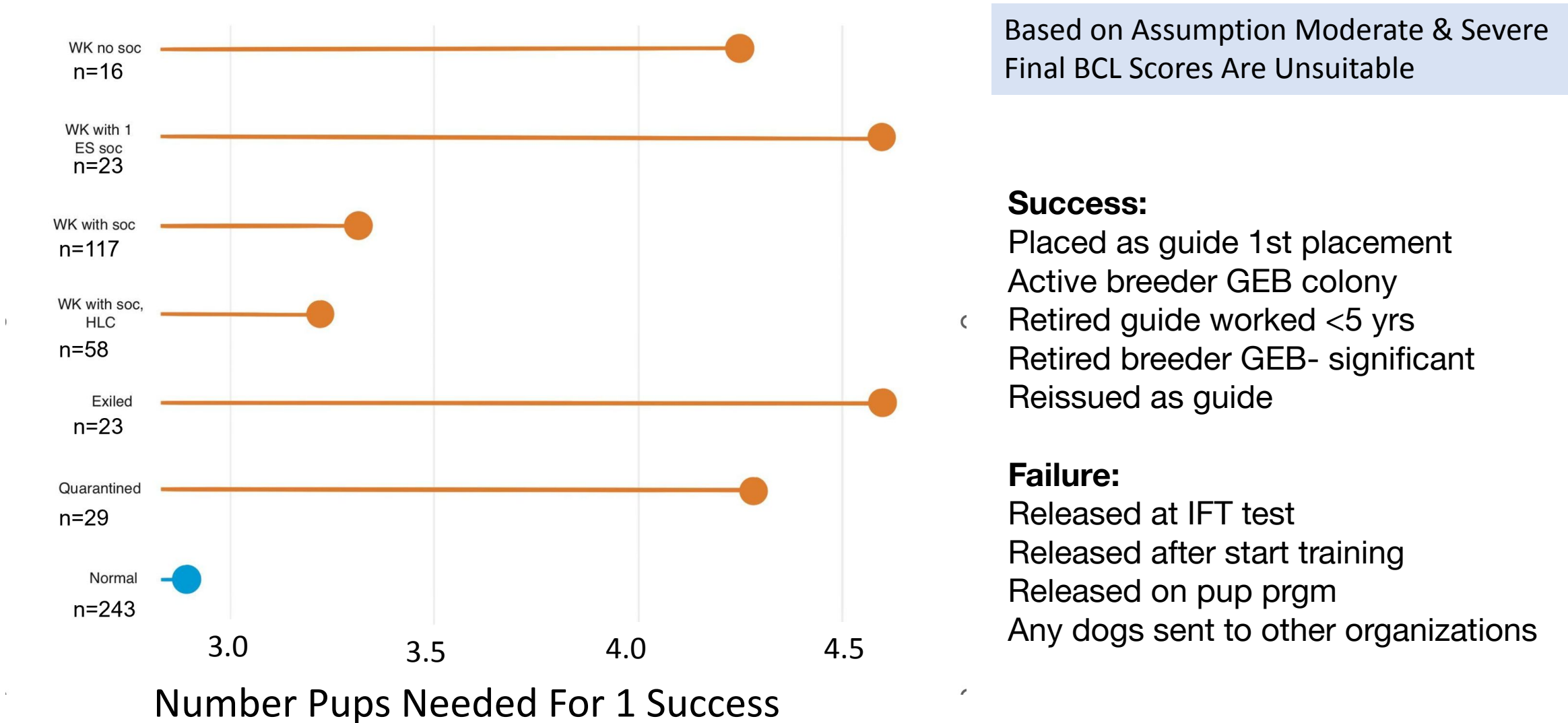


# Average Number of Moderate & Severe BCL Scores per Puppy



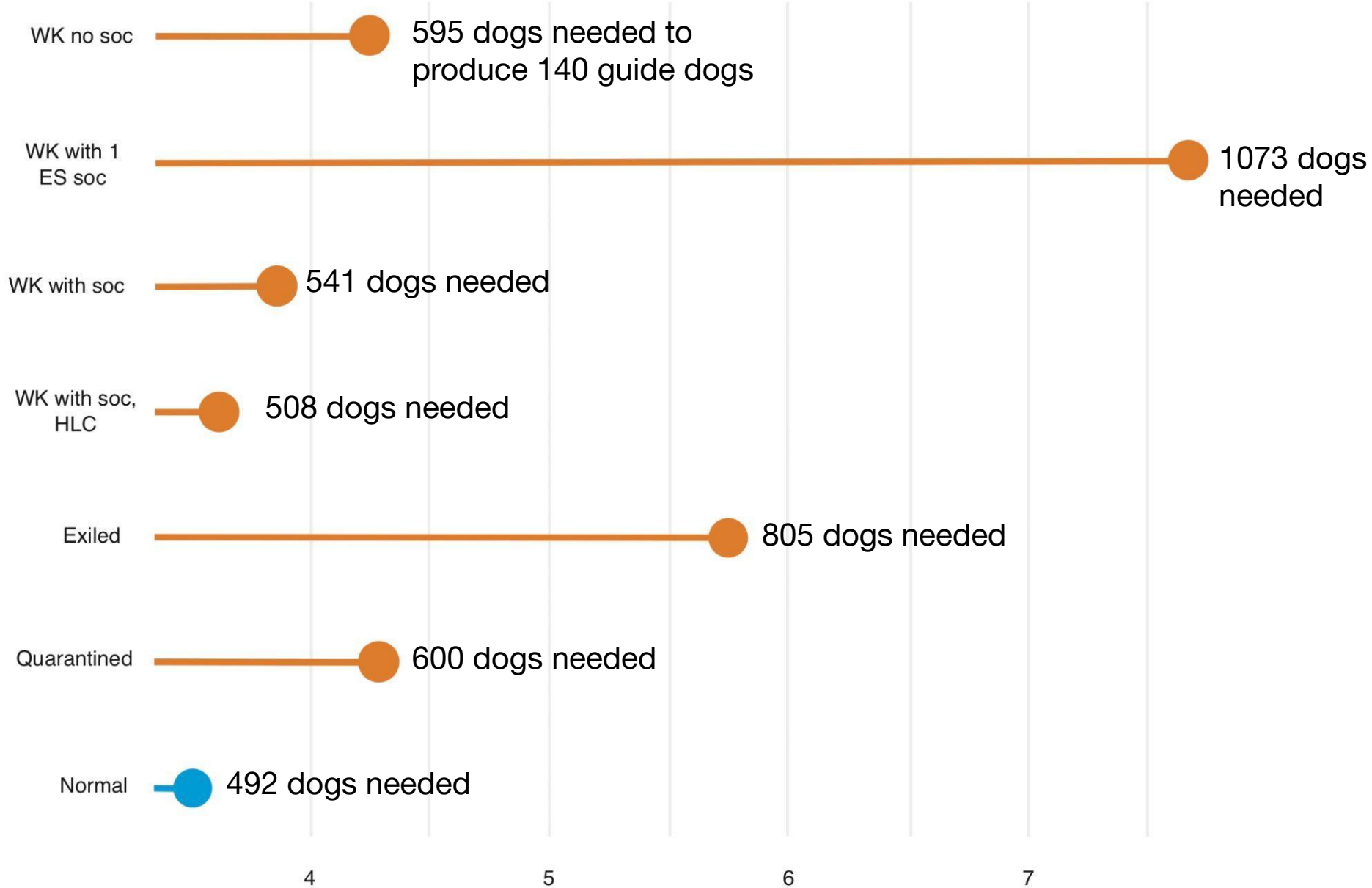
# Early Socialization and Effective 8-16 week Puppy Raising Can Increase Success

## Comparison of Number of Pups Needed for 1 Success by Socialization Group





# # Of Pups Needed to Produce 140 Guide Dogs



# Statistical Analysis on # of Low Scores

- T test

- Puppy Test alone:

```
t = -2.0364, df = 437.49, p-value = 0.04231
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.61294756 -0.01087778
sample estimates:
mean of x mean of y
 1.302041  1.613953
```

p = 0.0423

- Test 2 alone:

```
t = -2.3064, df = 411.67, p-value = 0.02158
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.54533732 -0.04348618
sample estimates:
mean of x mean of y
 0.7242798  1.0186916
```

p = 0.0216

- Test 3 alone:

```
t = -2.9813, df = 858.75, p-value = 0.002951
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5019331 -0.1034110
sample estimates:
mean of x mean of y
 1.014344  1.317016
```

p = 0.00295

In conclusion, results  
are significant!



# Statistical Analysis on # of Low Scores

- Anova

```
      Df Sum Sq Mean Sq F value Pr(>F)
Group      4    23.6    5.894   2.542 0.0384 *
Residuals 912 2115.1    2.319
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Tukey multiple comparisons of means
 95% family-wise confidence level

Fit: aov(formula = Score ~ Group, data = low_anova)

$Group
```

	diff	lwr	upr	p adj
WK no soc-Normal	0.379595132	-0.369092103	1.1282824	0.6369763
WK with 1 ES soc-Normal	0.376960086	-0.265032850	1.0189530	0.4945836
WK with soc-Normal	0.340356592	0.009378532	0.6713347	0.0403360
WK with soc, HLC-Normal	0.175310910	-0.254649048	0.6052709	0.7989665
WK with 1 ES soc-WK no soc	-0.002635046	-0.952203127	0.9469330	1.0000000
WK with soc-WK no soc	-0.039238539	-0.813235365	0.7347583	0.9999170
WK with soc, HLC-WK no soc	-0.204284222	-1.025496847	0.6169284	0.9607817
WK with soc-WK with 1 ES soc	-0.036603493	-0.707940548	0.6347336	0.9998892
WK with soc, HLC-WK with 1 ES soc	-0.201649175	-0.926916388	0.5236180	0.9418935
WK with soc, HLC-WK with soc	-0.165045682	-0.637702086	0.3076107	0.8752708

$p = 0.0384$

Most significant difference is between Normal and WK with soc— the two biggest groups

Still significant!

		Socialization					Impact	
Group	Total Puppies Raised GEB or other org	Whelp Kennel Passive	ES Room Ave #	Home Litter Care W Soc	Home Soc Ave #	6-7 wk ES Events Ave #		
Normal prior to parvo kennel	473/567 83%							
Home Litter Care prior parvo	156/182 86%							
Normal Kennel After Parvo	768/899 85%							
Home Litter Care-after parvo	325/380 86%							
WK with passive & ES room soc	164/198 83%							
Exiled in temp home 6-7 wks old	17/23 74%							
WK passive soc-no ES room	13/17 77%							
Quarantined-isolated at 7 wks, empty pens, no soc	15/30 50%							



Specific Impact- **Standard Deviation** from Average %Mod & Severe Last BCL Score of Total

Group	Ave Age Placed w Raiser (wks)	Attach To Handler	Separation Anxiety	Kennels Poorly	Dog Fear	Dog Distract	Social Manners W Dogs	Social Manners W People	Excessive Barking	New Situations Fear
% Average Mod/Severe		4.0%	2.1%	9.6%	1.3%	6.2%	1.8%	2.6%	2.4%	7.7%
Normal prior to parvo kennel	9	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>			
After parvo- reduced socialization	9									
WK with passive & ES room soc	9									
Exiled HS- WK passive & ES room then 1-2 home soc till placed	9									
WK-Passive Soc, No ES room & No Pavillion or Home Soc	7									
Quarantine Normal Soc until 7-8 wks then sterile kennel till about 15-16 wks	15									
Born just before Covid 19 pandemic	7									
Born during Covid 19 pandemic	7									
2x or Greater Lower than Normal								> 2x+ Higher than Normal & <1.9 St.Dev		

Specific Impact- Standard Deviation from Average

%Mod & Severe Last BCL Score of Total

Group	Ave Age Placed w Raiser (wks)	Activate by Stress	Resilience (poor return productive state)	Noise Fear	Object Fear	Traffic Fear	Surface Fear	Stranger Fear	Riding
% Average Mod/Severe		6.0%	6.0%	4.2%	3.4%	3.5%	5.3%	2.8%	0.9%
Normal prior to parvo kennel	9								
After parvo- reduced socialization	9								
WK with passive & ES room soc	9								
Exiled HS- WK passive & ES room then 1-2 home soc till placed	9								
WK-Passive Soc, No ES room & No Pavillion or Home Soc	7								
Quarantine Normal Soc until 7-8 wks then sterile kennel till about 15-16 wks	15								
Born just before Covid 19 pandemic	7								
Born during Covid 19 pandemic	7								
No impact: Body Handling or Stair Fear									

2x or Greater Lower than Normal

> 2x+ Higher than Normal & <1.9 St.Dev

> 1.8 St Dev than Average



# Questions

Jane.russenberger@iwdr.org

Early socialization website: <https://www.iwdr.org/early-socialization-home/>

