
Measuring Children's Media Use in the Digital Age

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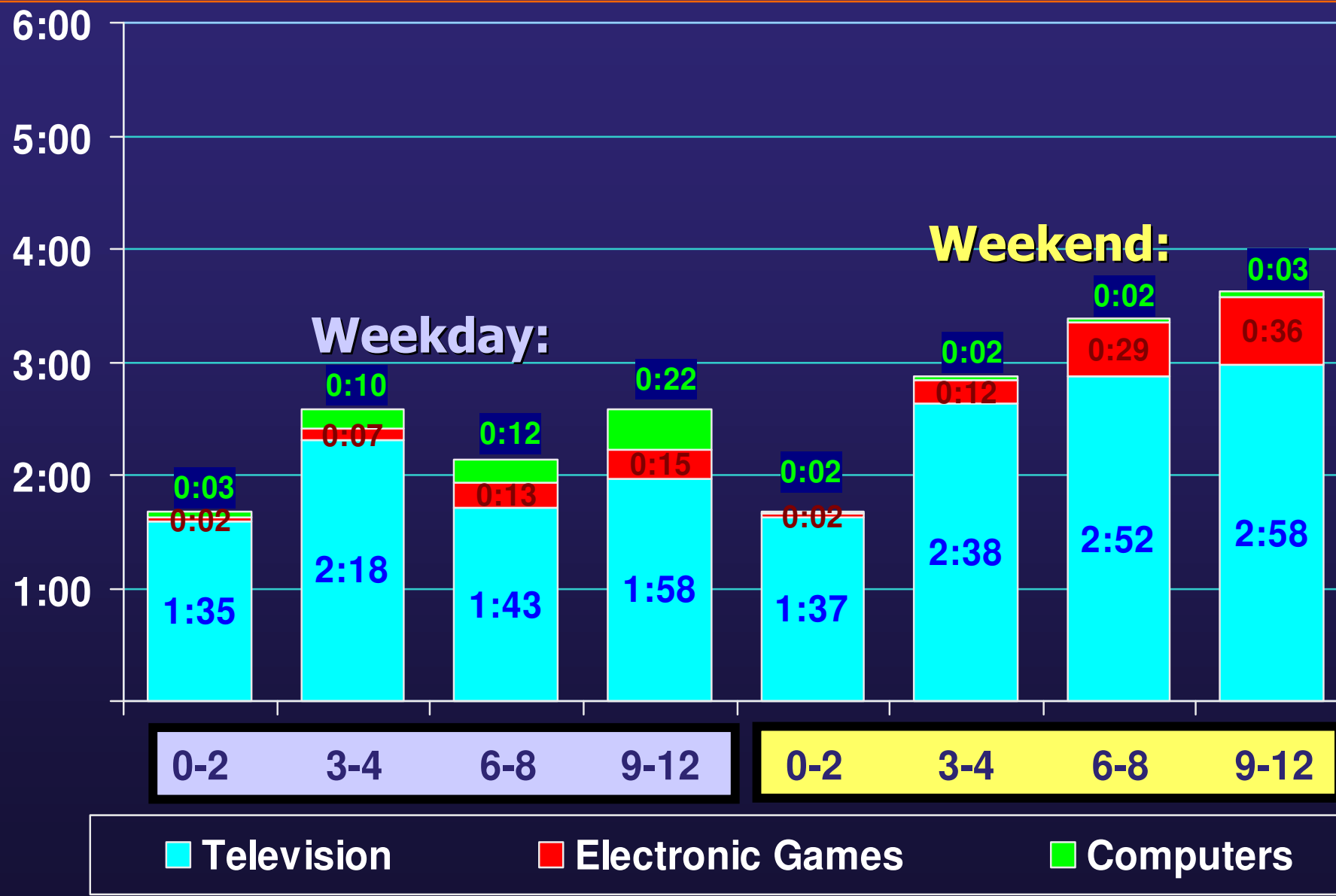
Children's Media Landscape in the Millennium

- 📺 Children use electronic media 2-5 hours daily
- 📺 More time with television than any other single activity except sleep
- 📺 Television in Bedroom
 - 📺 75% Older (8-18); 36% Very Young (0-6)
- 📺 Computer and Video Games Growing
 - 📺 44% Use computers on daily basis (8-18)
 - 📺 39% Play video games

Growing up in a Media Saturated Environment

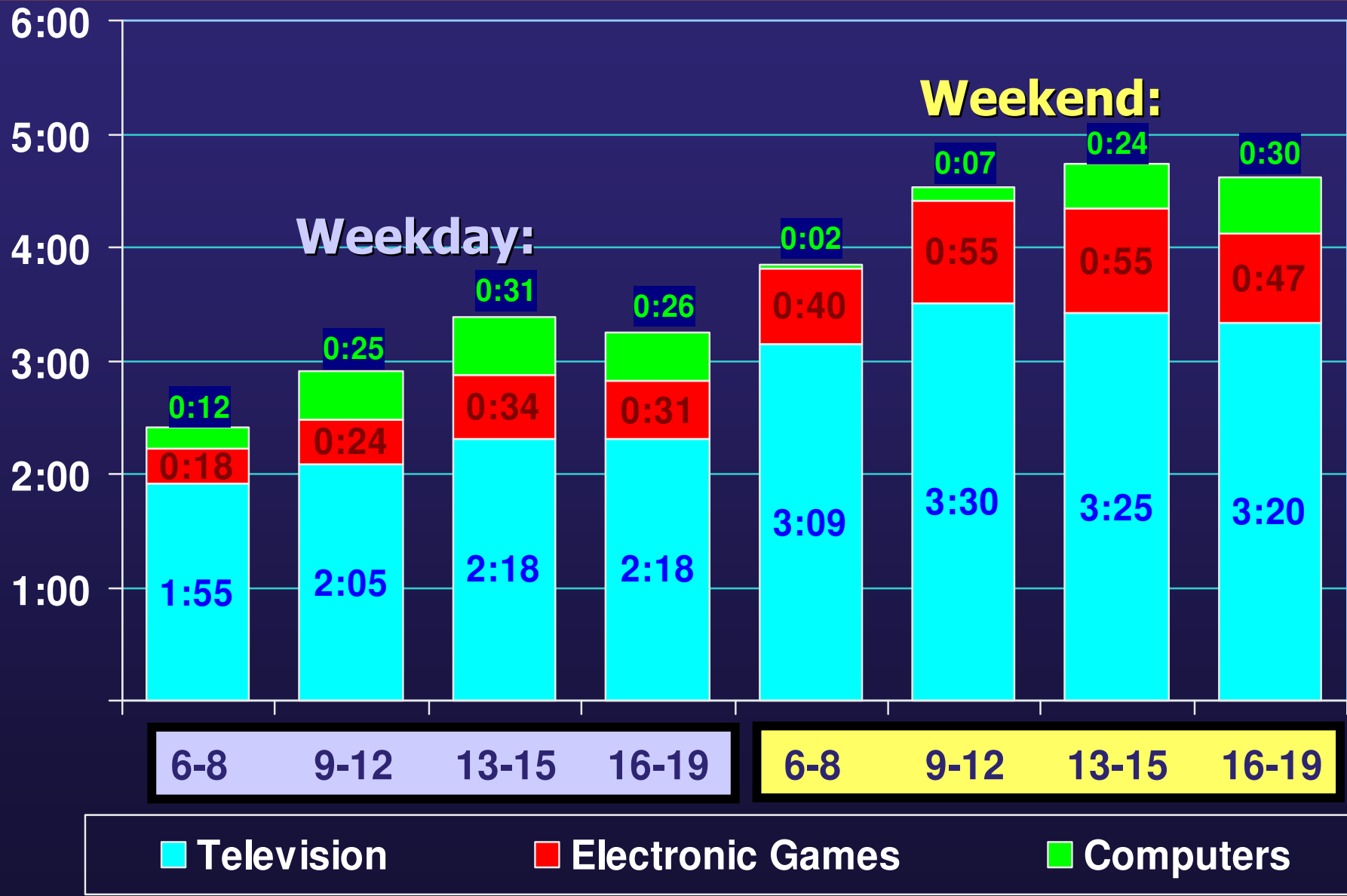
- 📺 Average number of TVs – 3.5
 - 📺 Cable or Satellite TV – 82% of Families
- 📺 Average number of VCR/DVDs – 1.9
- 📺 Average number of Computers – 1.5
 - 📺 Internet access – 74% of families
 - 📺 IM Software – 60% of families

Children's Media Landscape: 1997



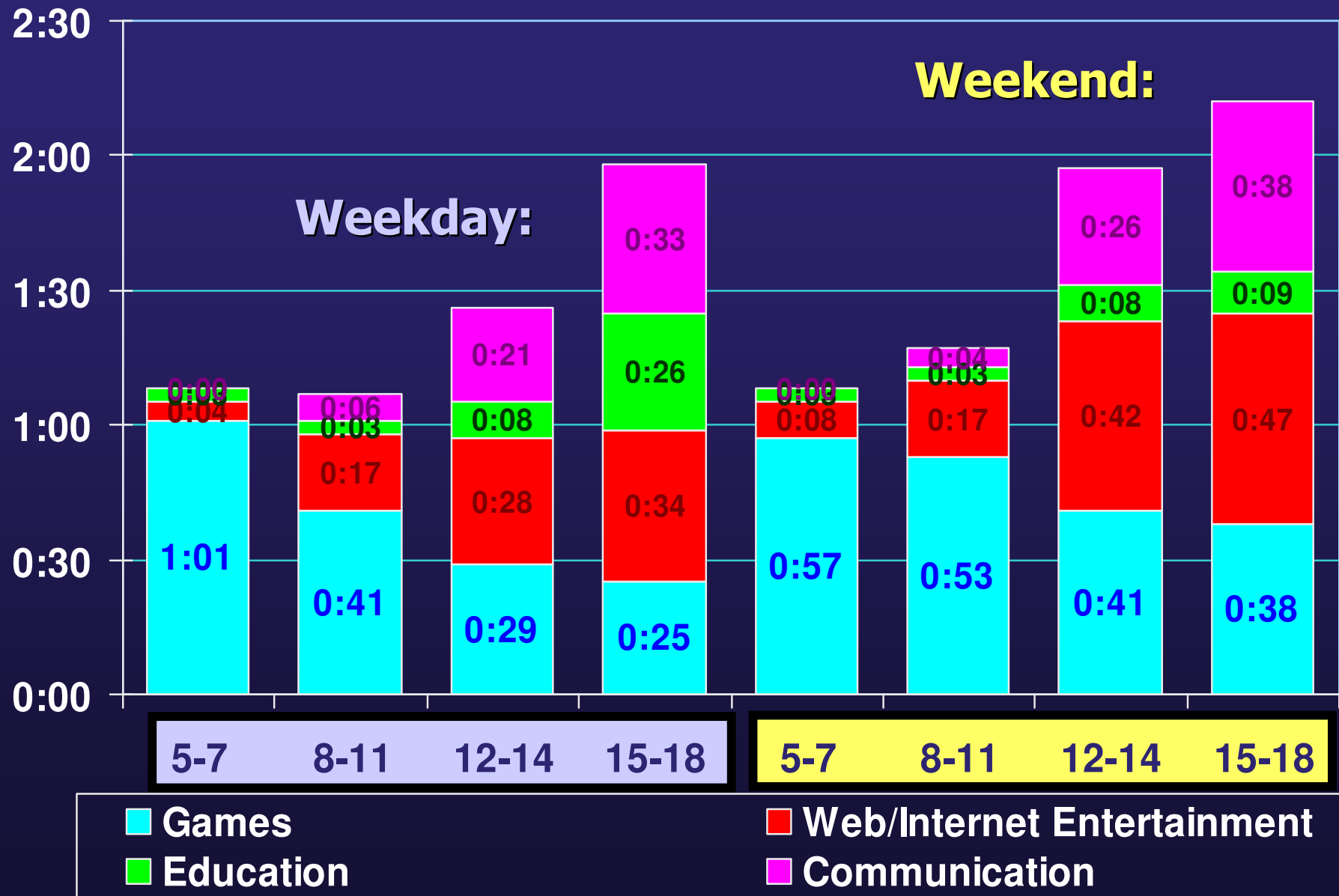
Source: PSID - Child Development Supplement (CDS-I)

Children's Media Landscape: 2002



Source: PSID - Child Development Supplement (CDS-II)

Children's Computer Use: 2002



* Among those with use. Source: PSID - Child Development Supplement (CDS-II)

Media Use in The Digital Era

- 📺 Switch from analogue to digital delivery...
- 📺 along with increasing miniaturization and portability of components...
- 📺 Has forever changed the landscape of available consumer technology.
- 📺 Digital Technology offers ability to use more media simultaneously.
- 📺 Rise of media multi-tasking, particularly among youth.

Why are we here?

📺 Increasing sense that children's media use has outpaced our ability to measure it.

📺 The American Adolescent:

In their bedroom...

doing homework on the computer...

while IMing their friends...

with their iPod headphones on...

and the TV on in the background.

Yikes!

Measuring Media Use

-  Global Time Estimates
-  Time Diaries
-  Media Diaries or Logs
-  Experience Sampling
-  Direct or Video Observation
-  Electronic Monitoring

Global Time Estimates

- 📺 "How many hours did you spend _____ yesterday?"
- 📺 "How many hours do you spend _____ in a typical day / week?"
- 📺 Inexpensive, quick, easy to administer
- 📺 Issues
 - § Allows 10-20 seconds for answer to complex question
 - § Assumes that each respondent:
 - § Searches memory for all relevant episodes
 - § Separates primary activity from others
 - § Can correctly add up episode lengths in their head
 - § Avoids reverting to social norms about how much a "normal person" uses the media in question

Time Use Diaries

- § Self-report of activities over a 24 hour period
 - § Recall or in “Real time”
- § Typically Record:
 - § Primary and Secondary Activities
 - § Duration
 - § Location
 - § Social Context (who else was there?)

CDS 24 Hour Time Diary



Child-Development Supplement

TIME DIARY

For: _____
(Child's name)

For: _____
(Day of the week)



The University of Michigan

CDS Time Diary Example

	A	B	C	D	E	F	G	H	J
TIME	What did your child do?	Time Began	Time End	IF WATCHING TV, was that a video tape or TV program?	IF TV, VIDEO, COMPUTER GAMES, what was the name of the (program/video/game) child was (watching/playing)?	Where was child?	Who was doing the activity with child?	Who (else) was there but not directly involved in the activity?	What else was child doing at the same time?
Midnight	<i>⓪ Sleeping</i>	<i>12:00</i>	<i>7:30</i>			<i>at home</i>			
	<i>⓪ Watching TV</i>	<i>5:30</i>	<i>6:00</i>	<i>T.V. program</i>	<i>Wishbone</i>	<i>at home</i>	<i>father, cousin</i>	<i>mother</i>	<i>playing w/ toys</i>
	<i>⓪ Eating dinner</i>	<i>6:00</i>	<i>6:25</i>			<i>at home</i>	<i>father, mother, cousin</i>		<i>talking</i>
	<i>Reading book from library</i>	<i>6:25</i>	<i>7:00</i>			<i>at home</i>		<i>cousin, mother,</i>	
	<i>Playing computer games</i>	<i>7:00</i>	<i>7:30</i>		<i>Oregon Trail</i>	<i>at home</i>	<i>cousin</i>	<i>mother, father</i>	
	<i>Taking a bath</i>	<i>7:30</i>	<i>8:20</i>			<i>at home</i>			
	<i>Brushing teeth</i>	<i>8:20</i>	<i>8:30</i>			<i>at home</i>			
	<i>Watching TV</i>	<i>8:30</i>	<i>9:00</i>	<i>Video</i>	<i>Aladdin</i>	<i>at home</i>	<i>cousin</i>	<i>father, mother</i>	<i>hitting cousin</i>
	<i>Listening to bedtime story</i>	<i>9:00</i>	<i>9:20</i>			<i>at home</i>	<i>mother</i>	<i>father</i>	
Midnight	<i>Sleeping</i>	<i>9:20</i>	<i>12:00</i>			<i>at home</i>			

Time Diary Issues:

- § Respondents record day as it unfolds
 - § More closely approximates chronology of day
- § Full day is accounted for
 - § Allows examination of time trade-offs
- § Doable in large scale populations
- § Expensive
 - § Mountain of data to be coded
- § Great at capturing everyday activities
 - § Problems with infrequent activities
- § Never very good at capturing multi-tasking
- § Problems with capturing
 - § short, frequent & “private” activities

Media Diaries

- § Adapted Time Diary Focusing on Media Use

- § Television viewing diaries

 - § Please record as they watch

 - § Please circle what they watched

- § Media viewing diaries

 - § Attempt to capture full scope of media use

Kaiser Media Diary (Generation M)

DIRECTIONS

PLEASE READ ALL OF THE INSTRUCTIONS CAREFULLY

THIS DIARY will be a record of your activities for **seven** days, beginning **today**. In your diary booklet there are seven sections: one for each day. Each section contains an Activities Grid and two end of day questions. Please fill in the Activities Grid throughout the day. At the end of each day, before you go to sleep, please answer the questions at the end of the section and make sure that the Activities Grid is complete.

ABOUT YOU QUESTIONS:

Before you begin to use the Activities Grid, please answer the "ABOUT YOU" questions on the next page. After you complete the five "ABOUT YOU" questions, please continue on to the Activities Grid.

ACTIVITIES GRID:

The Activities Grid is designed to help you keep track of the different kinds of media that you have used throughout the day. Each column is for a different half hour period during the day. There are five different questions.

1. WERE YOU DOING ANY MEDIA ACTIVITIES FOR AT LEAST 15 MINUTES?

(CIRCLE ONLY ONE ANSWER - PLEASE DO NOT LEAVE BLANK)

Yes - Answer the questions below.

No - Go to the next time slot.

Please see activities listed in Question 2 for examples of media activities.

2. WHAT WAS YOUR MAIN MEDIA ACTIVITY?

(CIRCLE ONLY ONE ANSWER)

- | | |
|---|-----------------------------------|
| 1. Listening to music | 7. Playing computer games |
| 2. Watching TV | 8. Doing homework on the computer |
| 3. Watching videotapes/DVDs | 9. Instant Messaging |
| 4. Watching a movie (in a theater) | 10. Emailing |
| 5. Reading for fun (books, magazines, etc.) | 11. Visiting websites |
| 6. Playing video games (handheld or player) | 12. Other computer activities |

Please circle the number that matches the **one** media activity that you were paying most attention to.

Then answer the next three questions about the media activity that you circled.

3. WHAT ELSE WERE YOU DOING? (CIRCLE AS MANY ANSWERS AS YOU NEED)

- | | |
|-----------------------------------|---|
| 1. Nothing else | 9. Reading |
| 2. Chores | 10. Playing video games |
| 3. Eating | 11. Playing computer games |
| 4. Talking on the phone | 12. Instant Messaging |
| 5. Homework (not on the computer) | 13. Emailing |
| 6. Homework (on the computer) | 14. Visiting websites |
| 7. Listening to music | 15. Other computer activities |
| 8. Watching TV, videos or DVDs | 16. Something else: (write in activity) |

Please circle the number or numbers that match the other things you were doing when you were reading, listening to music, playing a video game, watching TV or a movie, or using the computer. If you were doing "Something else," please write in your answer.

4. WHERE WERE YOU? (CIRCLE ONLY ONE ANSWER)

- | | |
|-------------------------|--|
| 1. My bedroom | 5. Before/after school program or child care |
| 2. Another room at home | 6. Car or bus or train |
| 3. A friend's home | 7. Someplace else |
| 4. School | |

Please circle the number that matches the place where you were when you were doing the activity.

5. WHO WAS WITH YOU? (CIRCLE AS MANY ANSWERS AS YOU NEED)

- | | |
|-----------------------|--------------------|
| 1. I was mainly alone | 5. Sitter or nanny |
| 2. Mother or father | 6. Grandparent |
| 3. Brother or sister | 7. Teacher |
| 4. Friend | 8. Someone else |

Please circle the number or numbers that match the people that were with you when you were doing the activity.

THANK YOU FOR YOUR HELP ON THIS IMPORTANT PROJECT!
REMEMBER: TODAY IS DAY ONE!

PLEASE RETURN THIS DIARY TO YOUR TEACHER ON _____

Kaiser Media Diary (Generation M)

DAY ONE

1. WERE YOU DOING ANY MEDIA ACTIVITIES FOR AT LEAST 15 MINUTES? (see activities list in Question 2)

6:00-6:30 AM

6:30-7:00 AM

7:00-7:30 AM

7:30-8:00 AM

8:00-8:30 AM

8:30-9:00 AM

CIRCLE ONLY ONE ANSWER - PLEASE DO NOT LEAVE BLANK

YES - Answer the questions below.
NO - Go to the next time slot.

Yes
Answer the
questions below ↓

No

Yes
Answer the
questions below ↓

No

Yes
Answer the
questions below ↓

No

Yes
Answer the
questions below ↓

No

Yes
Answer the
questions below ↓

No

Yes
Answer the
questions below ↓

No

2. WHAT WAS YOUR MAIN MEDIA ACTIVITY?

CIRCLE ONLY ONE ANSWER

1. Listening to music
2. Watching TV
3. Watching videotapes/ DVDs
4. Watching a movie (in a theater)
5. Reading for fun (books, magazines, etc.)
6. Playing video games (handheld or player)
7. Playing computer games
8. Doing homework on the computer
9. Instant Messaging
10. Emailing
11. Visiting websites
12. Other computer activities

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

6 7 8 9 10

6 7 8 9 10

6 7 8 9 10

6 7 8 9 10

6 7 8 9 10

6 7 8 9 10

11 12

11 12

11 12

11 12

11 12

11 12

3. WHAT ELSE WERE YOU DOING?

CIRCLE AS MANY ANSWERS AS YOU NEED

1. Nothing else
2. Chores
3. Eating
4. Talking on the phone
5. Homework (not on the computer)
6. Homework (on the computer)
7. Listening to music
8. Reading
9. Playing video games
10. Playing computer games
11. Instant Messaging
12. Emailing
13. Visiting websites
14. Other computer activities
15. Something else: (write in activity #)

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

6 7 8 9 10

6 7 8 9 10

6 7 8 9 10

6 7 8 9 10

6 7 8 9 10

6 7 8 9 10

11 12 13 14 15

11 12 13 14 15

11 12 13 14 15

11 12 13 14 15

11 12 13 14 15

11 12 13 14 15

16

16

16

16

16

16

4. WHERE WERE YOU?

CIRCLE ONLY ONE ANSWER

1. My bedroom
2. Another room at home
3. A friend's home
4. School
5. Before/after school program or child care
6. Car or bus or train
7. Someplace else

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

6 7

6 7

6 7

6 7

6 7

6 7

5. WHO WAS WITH YOU?

CIRCLE AS MANY ANSWERS AS YOU NEED

1. I was mainly alone
2. Mother or father
3. Brother or sister
4. Friend
5. Sitter or nanny
6. Grandparent
7. Teacher
8. Someone else

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

6 7 8

6 7 8

6 7 8

6 7 8

6 7 8

6 7 8

6:00-6:30 AM

6:30-7:00 AM

7:00-7:30 AM

7:30-8:00 AM

8:00-8:30 AM

8:30-9:00 AM

Media Diary Issues:

- § Asks only about media use
 - § Can collect information over longer time period
 - § More comprehensive, richer information about media use
- § Precision of time measurement
 - § 15 minute blocks
- § Cannot address issue of time trade-offs
 - § Time spend in other activities not collected

Experience Sampling Method (ESM)

- § Random sample of activities and experience of activities throughout the day
 - § “Beeper” studies
- § Respondents given an electronic paper and booklets
- § Write down activities and experience in booklets when they paged (“beeped”)
- § Assesses internal (experience) and external (duration, location, social context) of activities

Sloan Study ESM

Appendix E. Sloan Study of Youth and Social Development ESM

1

Date _____ Time you were beeped _____ approx. time you answered _____ am/pm

As you were beeped ...
 Where were you? _____

What was on your mind? _____

What was the main thing you were doing? _____

What else were you doing? _____

Was the main thing you were doing ...
 More like work () More like play () Both () Neither ()

		to, at all	very much
How well were you concentrating?	0	1 2 3 4 5 6 7 8 9	
Were you living up to expectations of others?	0	1 2 3 4 5 6 7 8 9	
Was it hard to concentrate?	0	1 2 3 4 5 6 7 8 9	
Did you feel self-conscious or embarrassed?	0	1 2 3 4 5 6 7 8 9	
Did you feel good about yourself?	0	1 2 3 4 5 6 7 8 9	
Did you enjoy what you were doing?	0	1 2 3 4 5 6 7 8 9	
Were you living up to your expectations?	0	1 2 3 4 5 6 7 8 9	
Did you feel in control of the situation?	0	1 2 3 4 5 6 7 8 9	

Were you doing the main activity because ...
 You wanted to () You had to () You had nothing else to do ()

Describe your mood as you were beeped:

	very	quite	some	neither	some	quite	very		
Happy	0	1	2	3	4	5	6	7	C Sad
Weak	0	1	2	3	4	5	6	7	C Strong
Passive	0	1	2	3	4	5	6	7	C Active
Lonely	0	1	2	3	4	5	6	7	C Sociable
Ashamed	0	1	2	3	4	5	6	7	C Proud
Involved	0	1	2	3	4	5	6	7	C Detached
Excited	0	1	2	3	4	5	6	7	C Bored
Clear	0	1	2	3	4	5	6	7	C Confused
Worried	0	1	2	3	4	5	6	7	C Relaxed
Competitive	0	1	2	3	4	5	6	7	C Cooperative

Who were you with?

- () alone () teacher () If you were with friends, what were the names?
 () mother () classmates/peers _____
 () father () strangers _____
 () sister(s) or brother(s) () friend(s) How many? _____
 () other relatives () other () male () _____
 () others _____

Turn over

64

Indicate how you felt about the main activity:

	1	2	3	4	5	6	7	8	9
Challenges of the activity	1	2	3	4	5	6	7	8	9
Your skills in the activity	1	2	3	4	5	6	7	8	9
Was this activity important to you?	1	2	3	4	5	6	7	8	9
How difficult did you find this activity?	1	2	3	4	5	6	7	8	9
Were you succeeding at what you were doing?	1	2	3	4	5	6	7	8	9
Did you wish you had been doing something else?	1	2	3	4	5	6	7	8	9
Was this activity interesting?	1	2	3	4	5	6	7	8	9
How important was it in relation to your future goals?	1	2	3	4	5	6	7	8	9

If you had a choice ...

Who would you be with? _____

What would you be doing? _____

Since you were last beeped, did you do any? (estimate to nearest quarter hour)
 (Please circle "0" if you haven't done the activity.)

TV watching 0 1/4 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 Hours

Chores errands 0 1/4 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 Hours

Paid work 0 1/4 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 Hours

Hanging out with friends 0 1/4 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 Hours

Homework 0 1/4 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 Hours

... Has anything happened, or have you done anything which could have affected how you feel?

Any comments?

ESM Issues:

- § Data collected in real-time
- § Can provide information about how people use and experience media
- § Requires ability to keep track of beeper
- § Requires awareness of internal states
- § Requires ability to verbalize internal states
- § Cannot assess total time spent with media
- § Cannot address issue of time trade-offs

Direct Observation

- § “Gold-standard”

 - § Ethnographic Roots

- § Shadowing

 - § Following participants as they go about their day



- § Videotape Observation

Direct Observation Issues:



- § Gold-standard with respect to accuracy
- § Enormously labor intensive and time consuming
- § Shadowing requires an army of observers
- § Videotaping gets around that problem but...
 - § Substantial equipment needs
 - § Staff to trouble shoot technical problems
 - § Added advantage of taping programs viewed but...
 - § Can only see what the camera can see
- § Both result in a mountain of data to code
- § Too labor intensive and costly for large samples
- § Observers presence can influence behavior

Validation Work




Global estimates

-  Correlated .54 with observational measures
-  Overestimate use by as much as 6 hours

Time diary estimates

-  Correlated .85 with observational measures
-  Overestimate use by about 45 minutes

Overall:

-  Global estimates – overestimate everything
-  Time diaries – still overestimate but less so
-  ESM – underestimate activities outside of home

Electronic Monitoring Devices

§ Nielsen People Meter

§ Arbitron Portable People Meter

§ Both proprietary technology

Nielsen People Meter



- Records what is on set
- Enter ID # for who is watching

Arbitron Portable People Meter



- Worn like a pager
- Captures inaudible signal encoded in any broadcast media
- Records date, time, specific program

PPM Base Station



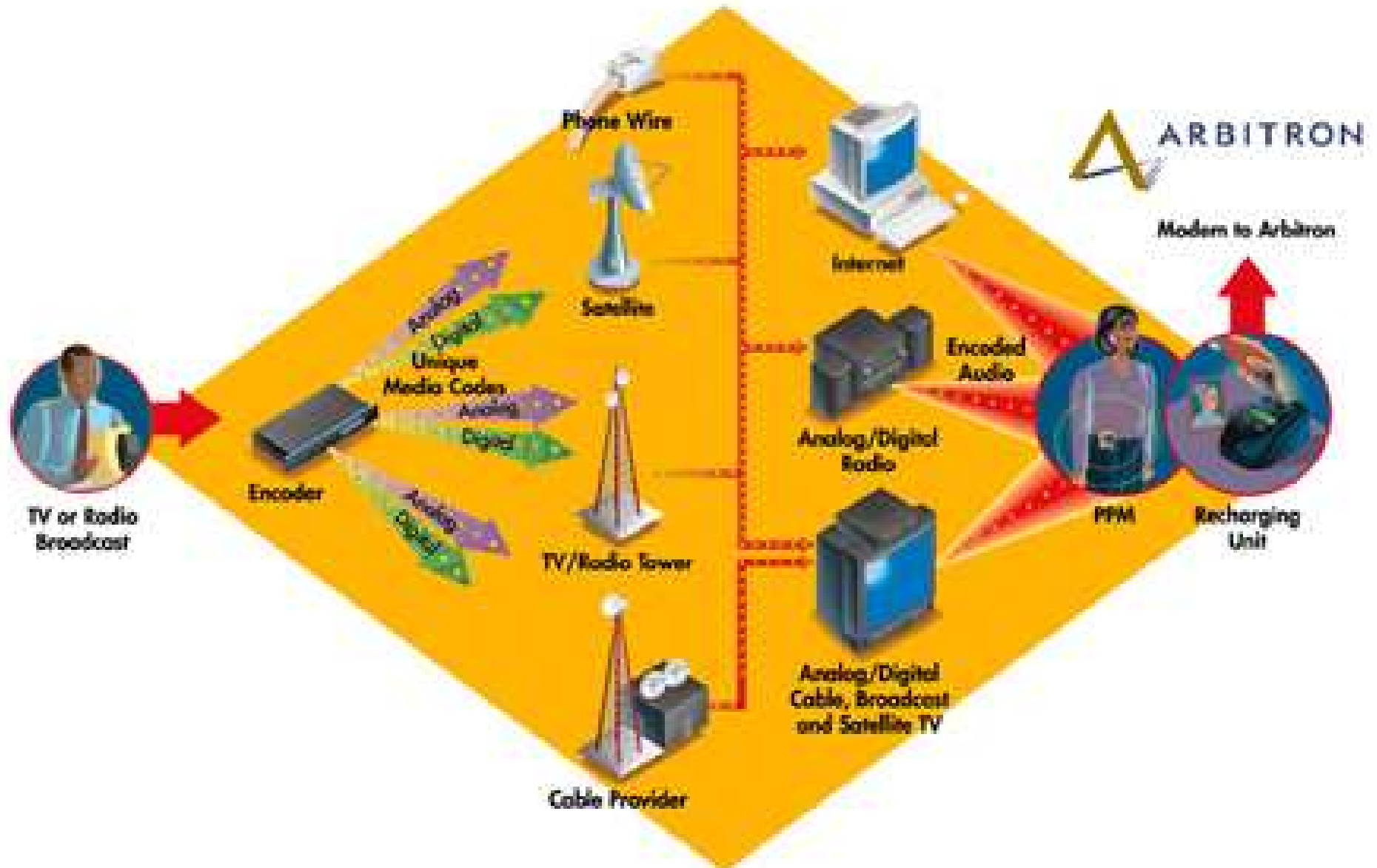
PPM Dock for recharge, data dump, & points



Nightly docking

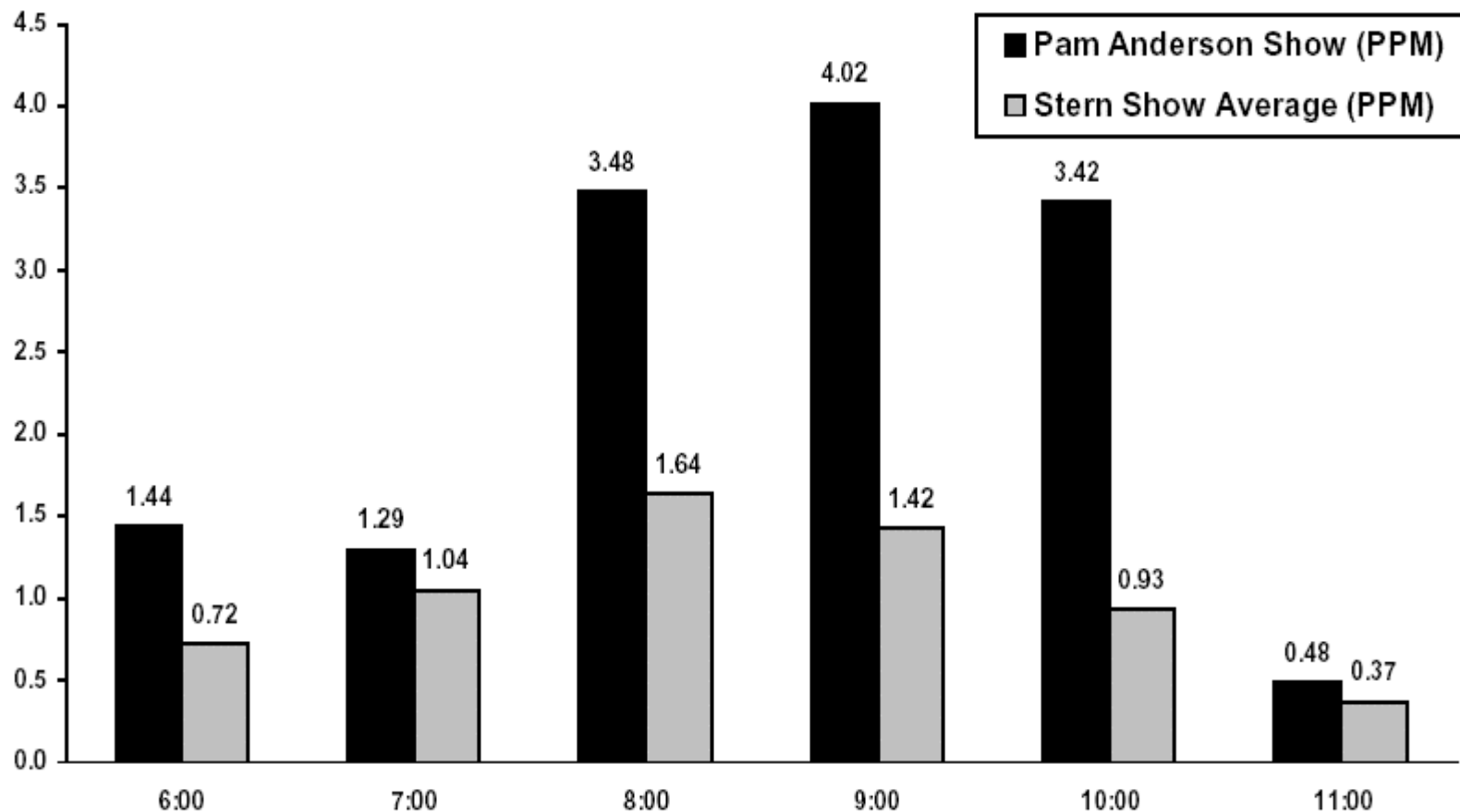
- Recharges
- Downloads and transmits data
- Earns points (feedback)

The Portable People Meter System



Arbitron Example: PPM – Market Share Data

DISCERNING THE IMPACT OF A SPECIFIC GUEST APPEARANCE: PAMELA ANDERSON ON THE HOWARD STERN SHOW



February 2002, Philadelphia Metro. Persons 12+, Monday-Friday 6A-10A

Electronic Monitor Issues:

§ Nielsen People Meter:

- § Developed for TV

- § Requires users to log in and out

- § Limited to home viewing

- § Hard to know if people are actually watching

§ Arbitron Portable People Meter:

- § Passive data collection

 - § No involvement besides carrying device required

- § Provides true multi-media data

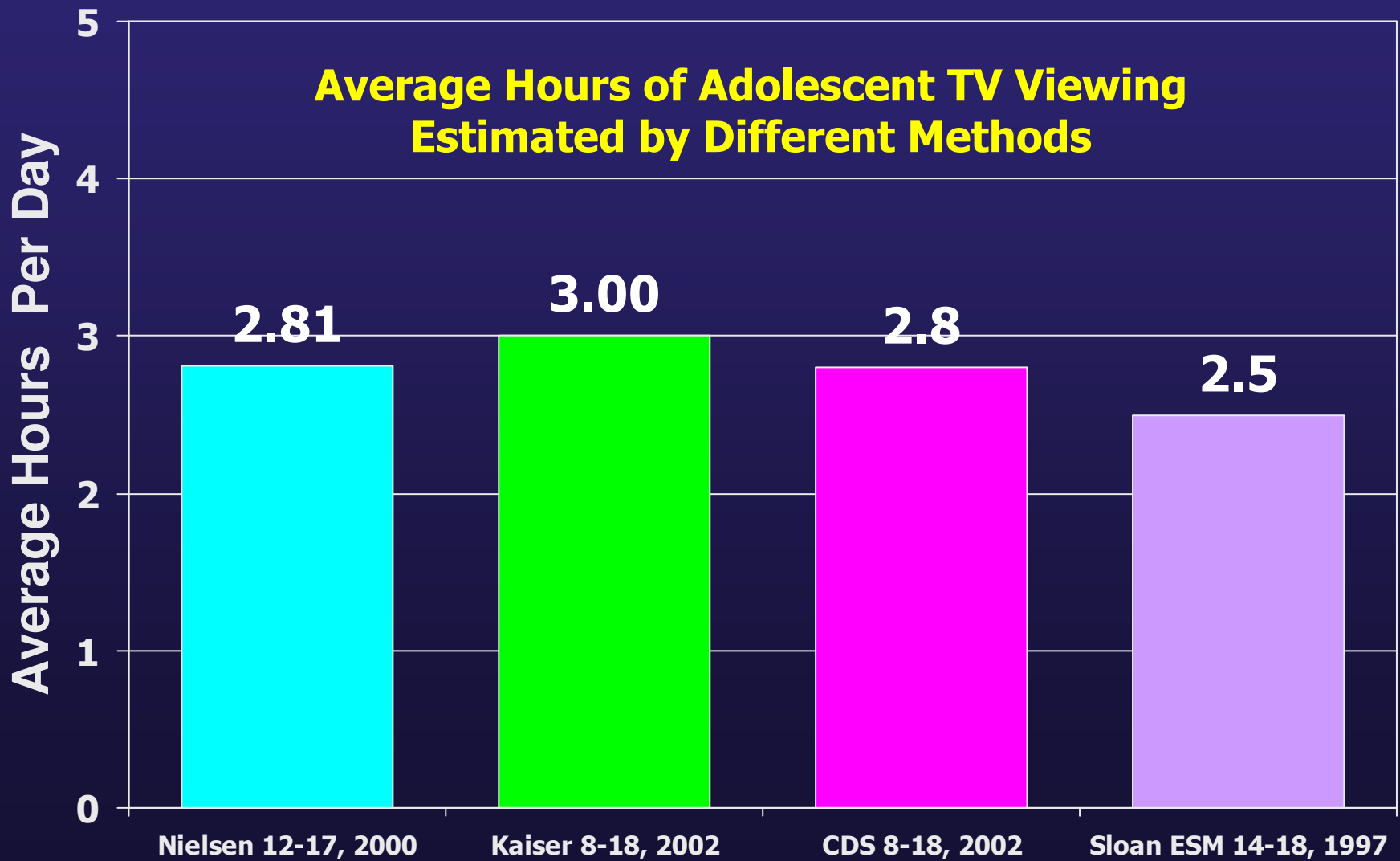
- § Measures “people not devices”

Additional Issues:

- § Both are proprietary technology & data
- § Both essentially media diaries
 - § Cannot assess time trade-offs
- § Nielsen estimates almost always higher than existing survey estimates
- § Portable People Meter estimates even higher than Nielsen
- § Definitions of Viewer
 - § Nielsen: “someone who pushes a button on the people meter remote”
 - § Arbitron: “someone within earshot of a station signal coming from a TV set”

Questions to Ponder

1. How close is close enough?



Questions to Ponder

2. What do we mean by “user”?

- § Arbitron: “someone within earshot of a station signal from Radio/TV/Computer”
 - § Is this what we mean by a user?
- § Attention is the key question here
 - § Eyes on the screen?
 - § Memory that you used it?
 - § If I don't notice it am I using it?
 - § When are automated techniques appropriate and when are they not?
 - § How can eye-tracking help us?

2. What do we mean by “user”?

§ Ambient Media

§ If I don't notice it am I using it?

§ When is measuring it important?

§ What is important about it?

§ Amount? Content?

§ Advertising as ambient media?

§ Uses:

§ Which media use is “important” and which is not?

§ Do we need to measure every “speck” of use?

§ Checking weather? Movie times?

2. What do we mean by “user”?

§ Answer will depend on your question

§ Theory:

§ Could easily be included in existing theories

§ Theories of Parenting and Peer Interactions

§ Life Course of Media Use

§ With attention to developmental tasks faced by children at different ages

§ Theories of Attention – Not sure that media is an entirely “new” thing

§ Sesame street was “too fast”

§ Triangulation of Measurement

2. What do we mean by “user”?

- § Theories of Attention – Not sure that media is an entirely “new” thing
 - § Sesame street was “too fast”
- § Theories of Use:
 - § Is the new media so new?
 - § Using media to stay connected
 - § Yet – social gatherings went away after introduction of television (Tannis McBeth)
 - § Proliferation of bedroom media means more separation within families
- § **Last Point: Triangulation of Measurement**

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