



“The Balance of Power”

How Users Really Feel about Today’s Power Sources

2003 Program:
Portable Computers
Organizers

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Methodology

- **New Survey of:**
 - **Portable Computer Owners**
 - **Classifications based on consumer language:**
 - **Laptop, Notebook, Sub-notebook, Pen Tablet**
 - **Organizer Owners**
- **Questionnaire design**
 - **Developed with the Technical Advisory Group of the Portable Power Conference**
 - **Covers a battery of consumer usage and attitudes**
 - **Also covers a trade-off analysis of selected power related features called “conjoint analysis”**
- **Fielded via internet in July 2003 to a demographically balanced panel of 300 for each device**

Portable Computers

Overview

- **Battery performance is more important than many other power related factors including weight, screen size, screen resolution and processor speed**
 - **Achieving satisfaction with batteries is still a challenge**
- **Median battery run time at 3 - 4 hours**
- **Median battery recharge time at 1 - 2 hours**
 - **3 - 4 hours if the device is in use**
- **1/3 recharge at least every business day**
- **Battery usage is only 17% of the total usage**
- **46% do not know what type of battery they own**

Overview

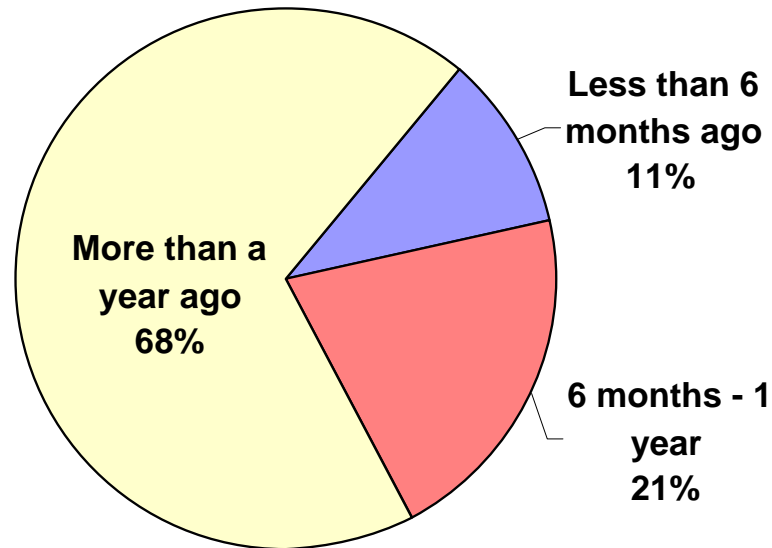
- **32% of portable computers owned were purchased within the last year**
- **Users tend to be very high income, well educated and older than 45**
 - **Women are under-represented**
- **Average portable computer cost at \$1400**
 - **Declining less than expected as users trade off lower cost for more features**
 - **Women spend less on the portable computers they buy**
 - **Women were much more likely to have received it as a gift**

Overview

- **Except when the device is received as a gift, in office usage is the dominant mode**
- **60% use their portable computer at least every business day**
- **Wired usage and AC usage dominate**
 - **Wireless users are much more likely to be running on battery power**
- **Only 1/5 own an extra battery**

Device & User Profile

Age of Portable Computer



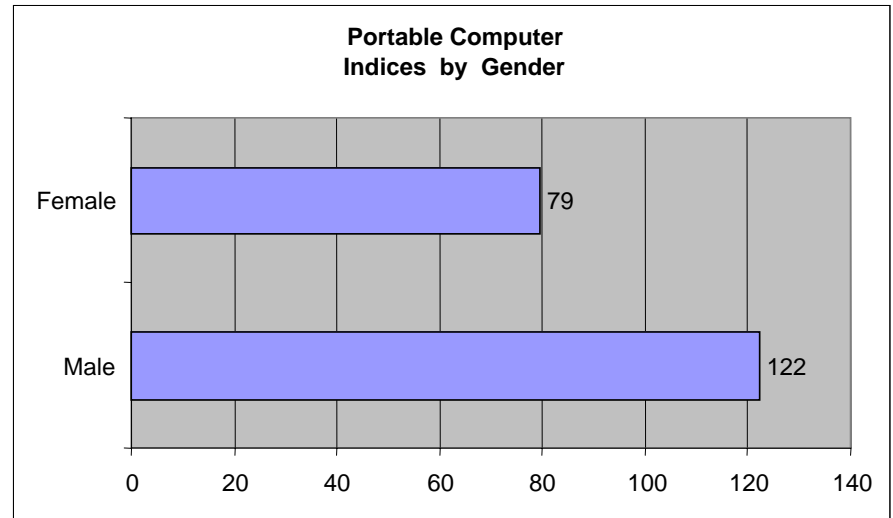
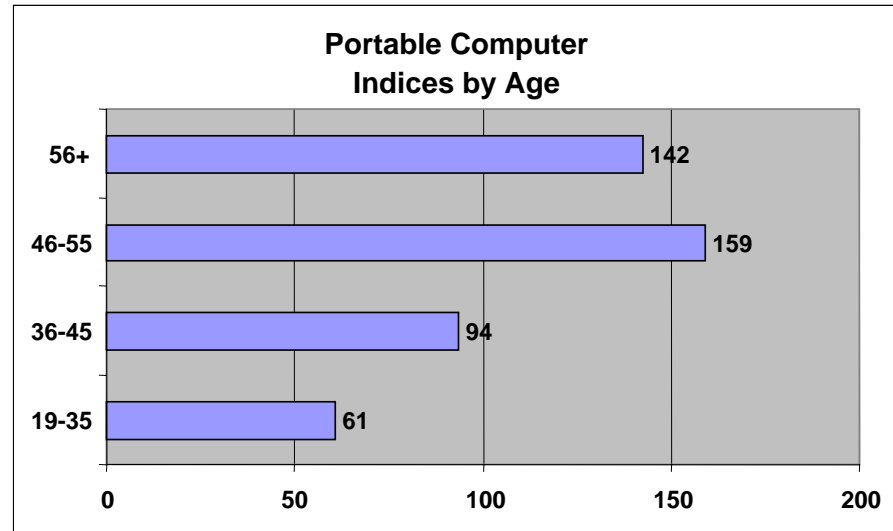
- **Device Age**

- **32% were purchased within the last year**
 - 11% within the last 6 months
 - Estimated replacement cycle = 3 to 4½ years

Device & User Profile

■ Users

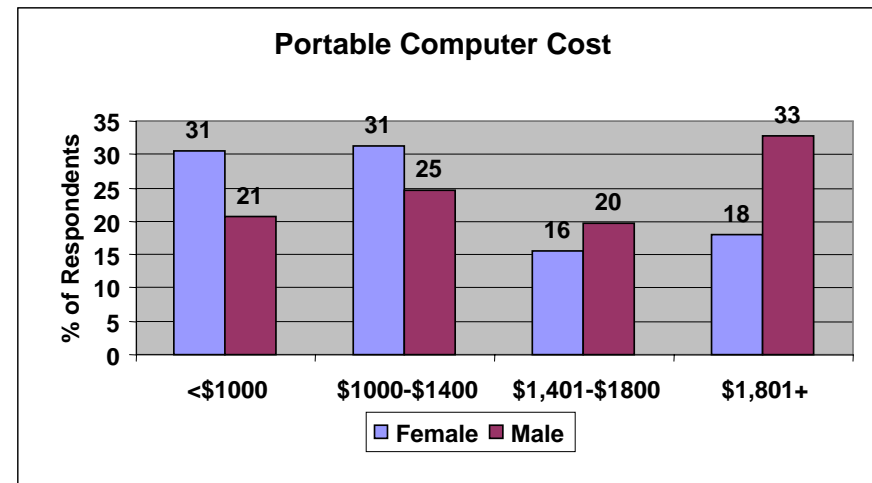
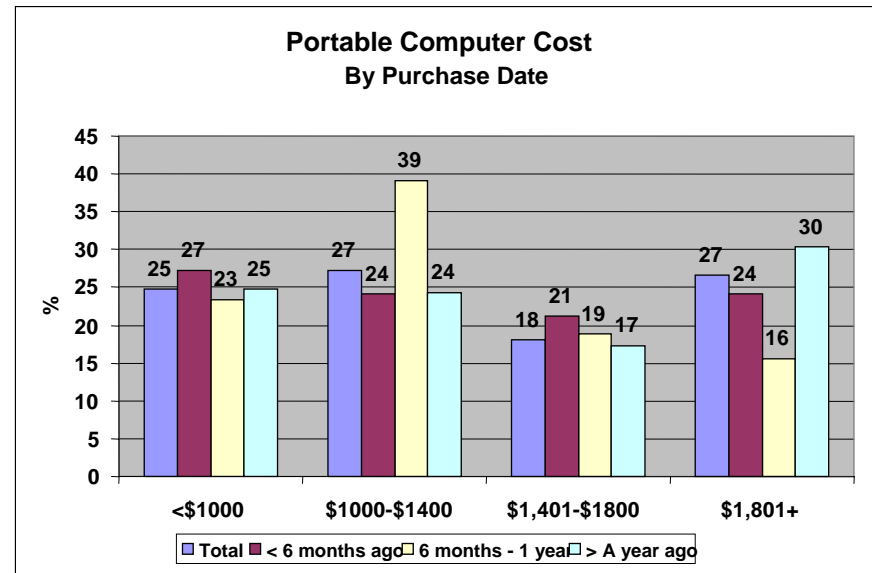
- Users tend to be very high income, well educated and older than 45
- Women are under-represented, although this may relate to their types of jobs



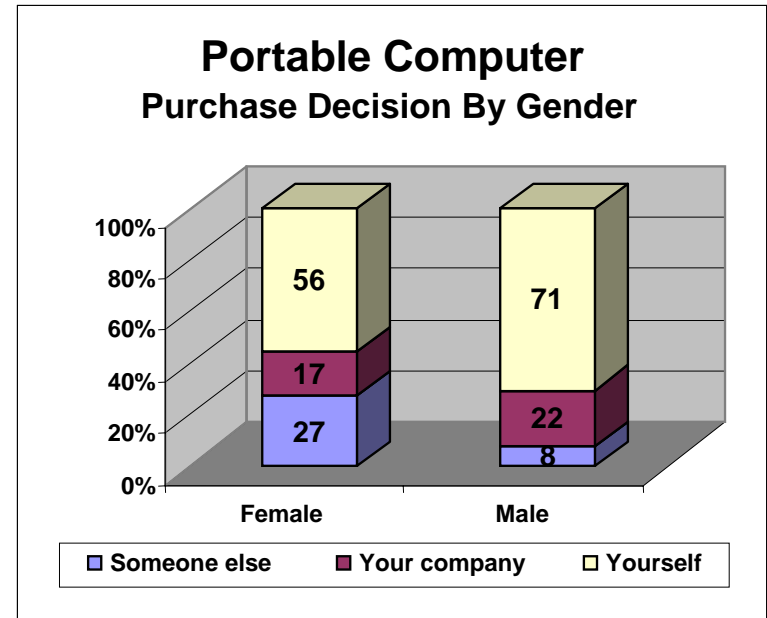
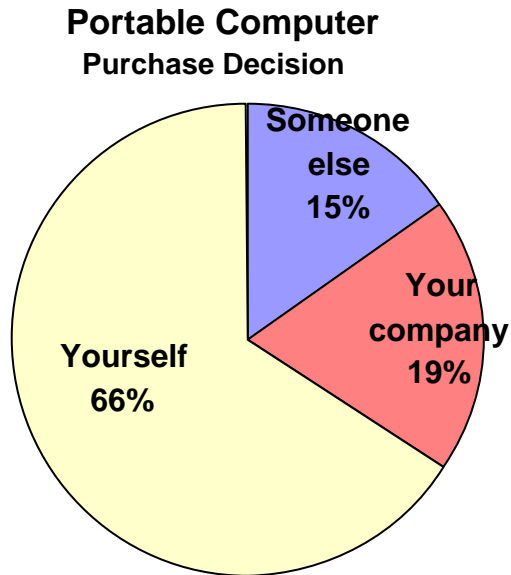
Device & User Profile

- Average cost was \$1400
 - Fewer recent purchases are over \$1800
 - The lack of change in the lower ranges indicates trading up by consumers

- Women also spend less on the portable computers they buy than men



Device & User Profile

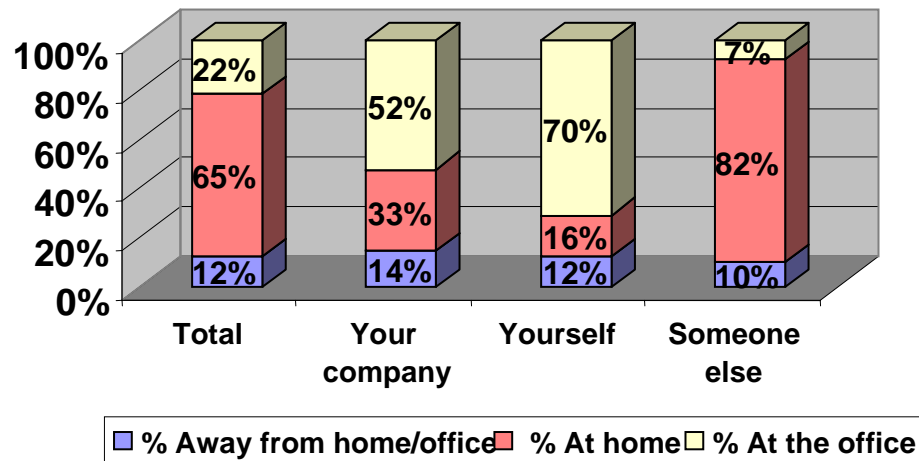


- Most people make their own purchase decisions, with 1/5 citing the a specific company decision
- For women, some third party, typically as a gift, is 3 times more likely to have made the decision than for men

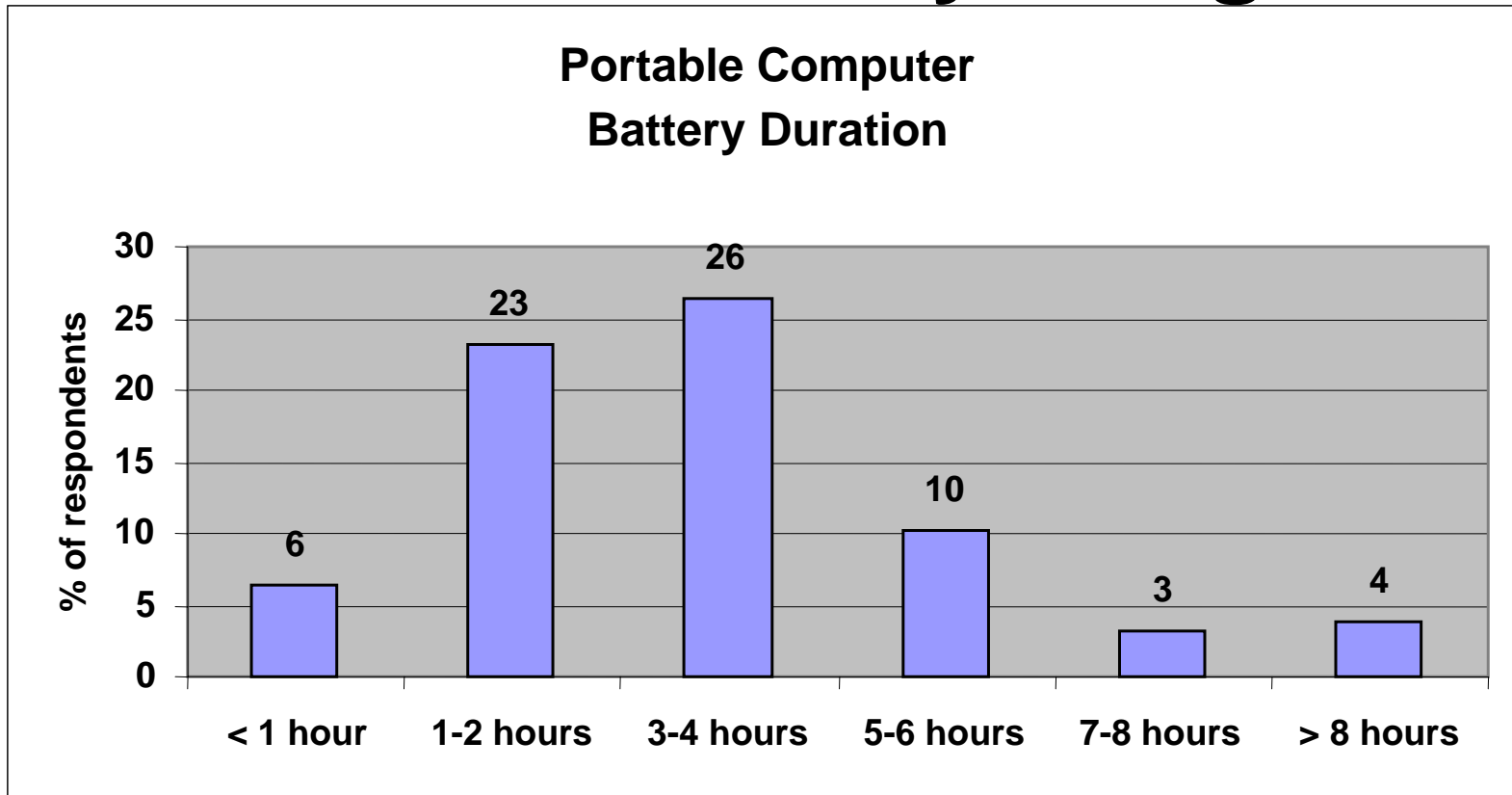
Usage Profile

- Overall, 65% of portable computer usage is at home
 - But this is influenced by the gift purchases which are dominated by home usage
 - For both company and individual purchases the usage skews much more to office
 - The 33% of home usage for company purchased portable computers highlights the value for the company

Portable Computer
Usage Location By Decision Maker

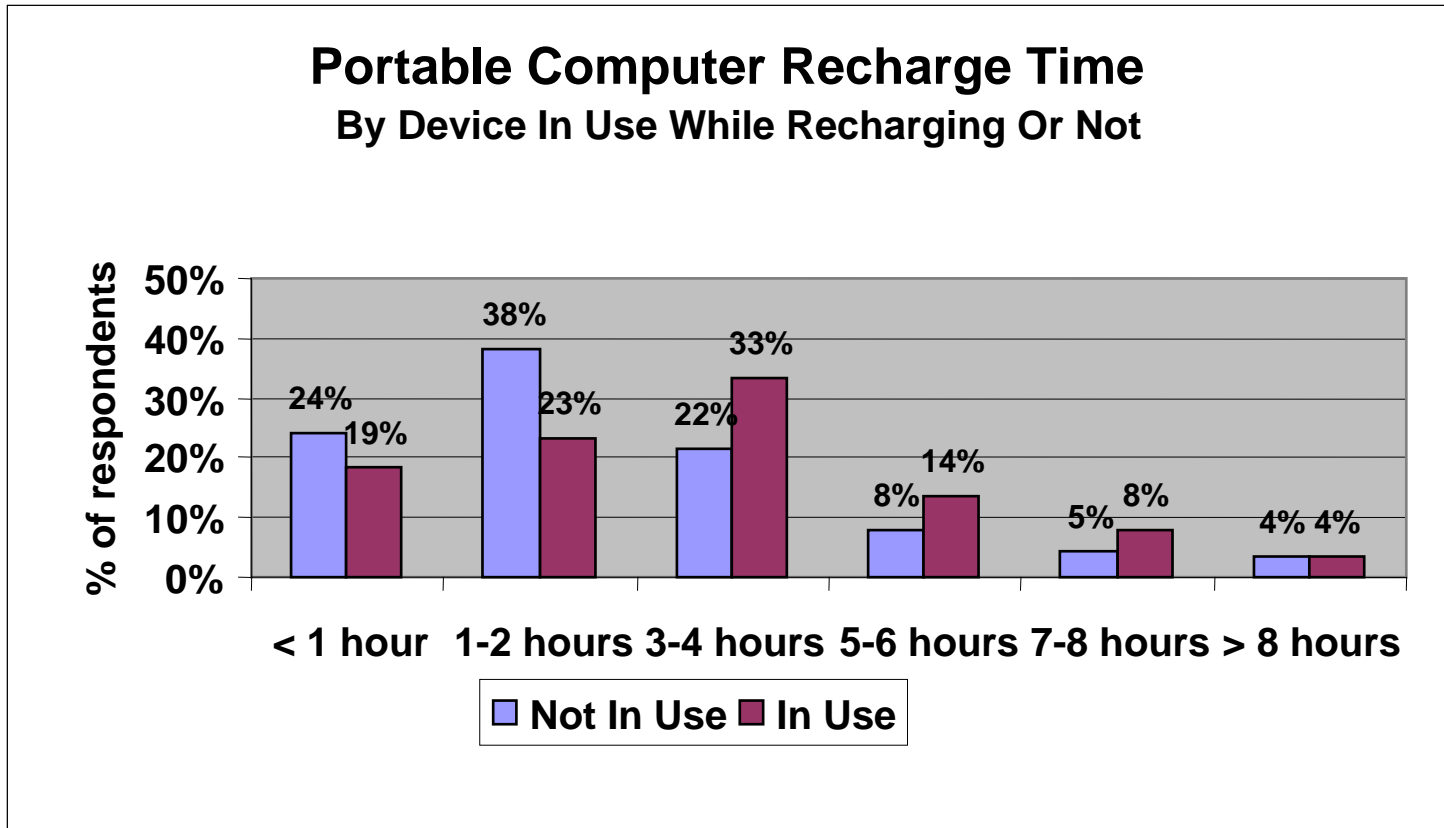


Device & Battery Usage



- 60% use their portable computers at least every business day
- Median battery run time at 3- 4 hours

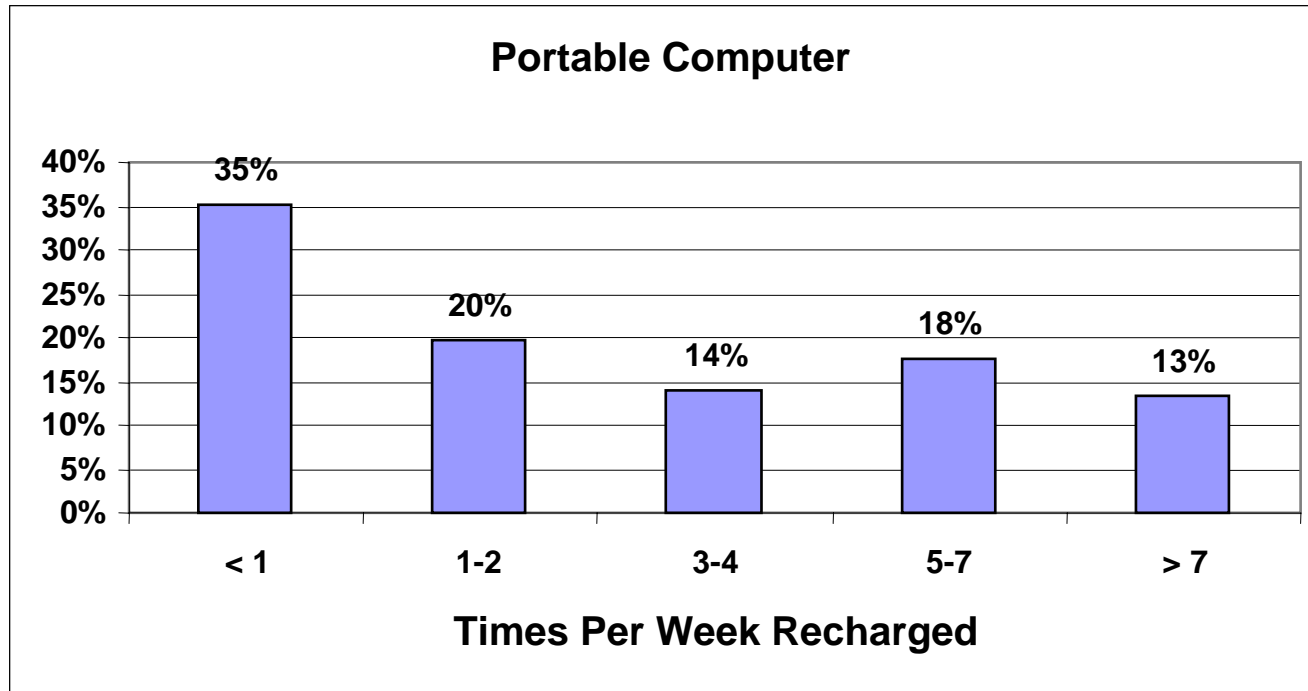
Device & Battery Usage



Median recharge time at 1-2 hours

- 3- 4 hours if charging while using the device

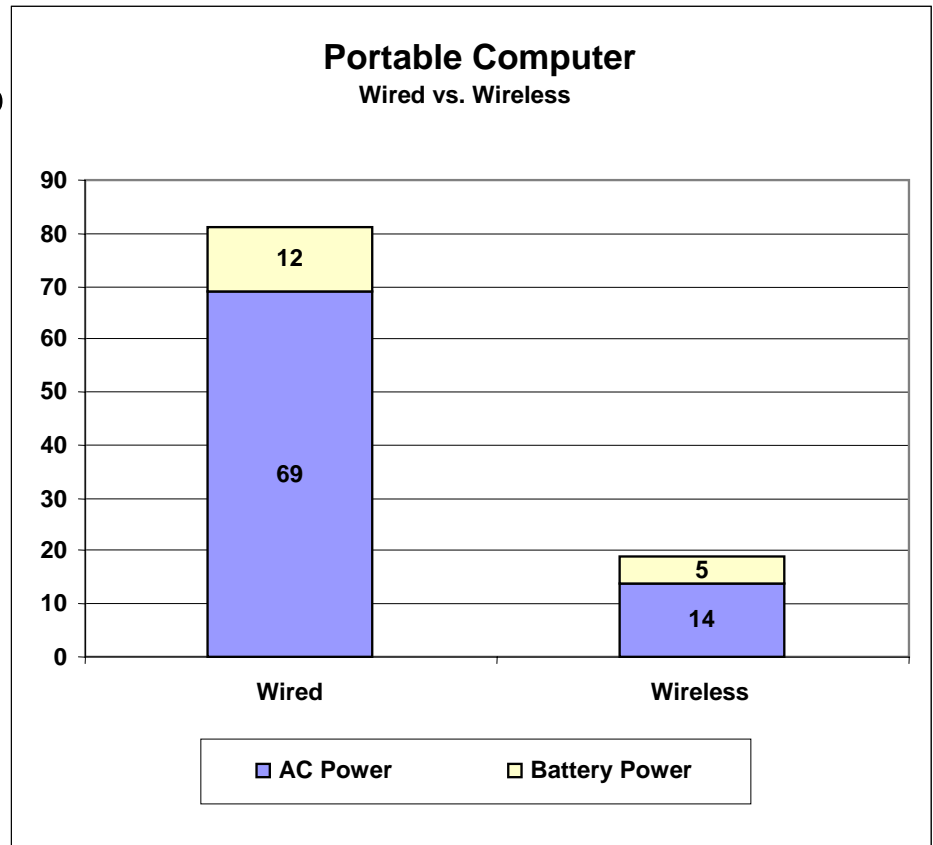
Device & Battery Usage



- **1/3 Recharge at least every business day**
- **But another 1/3 recharge less often than once a week**

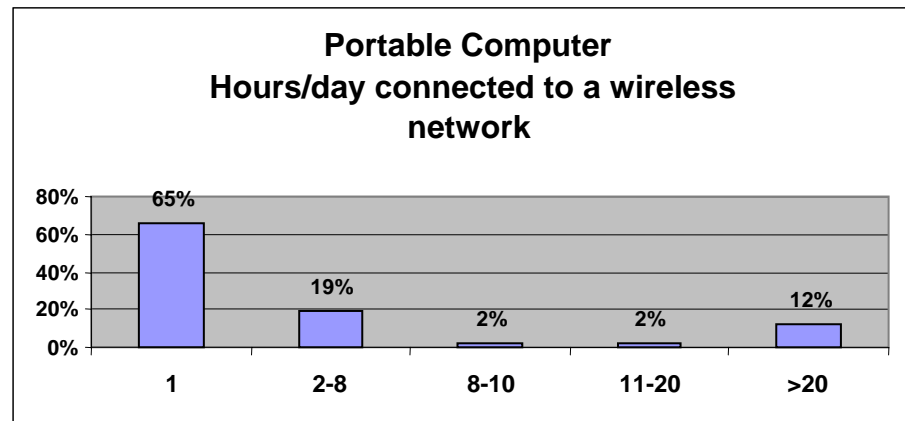
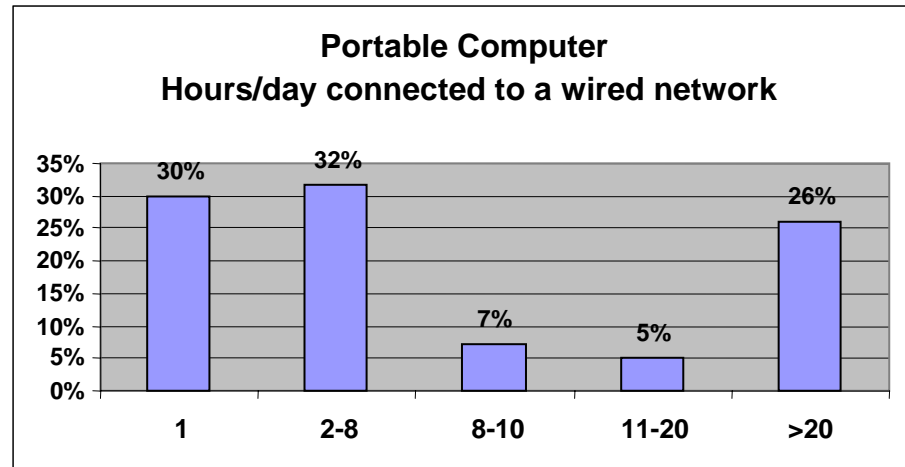
Device & Battery Usage

- **Wired usage is the dominant mode at 81%**
- **AC dominates both wired and wireless usage, with battery only at 17%**
- **The proportion of battery usage within wireless mode is 28% vs. only 15% in wired mode**

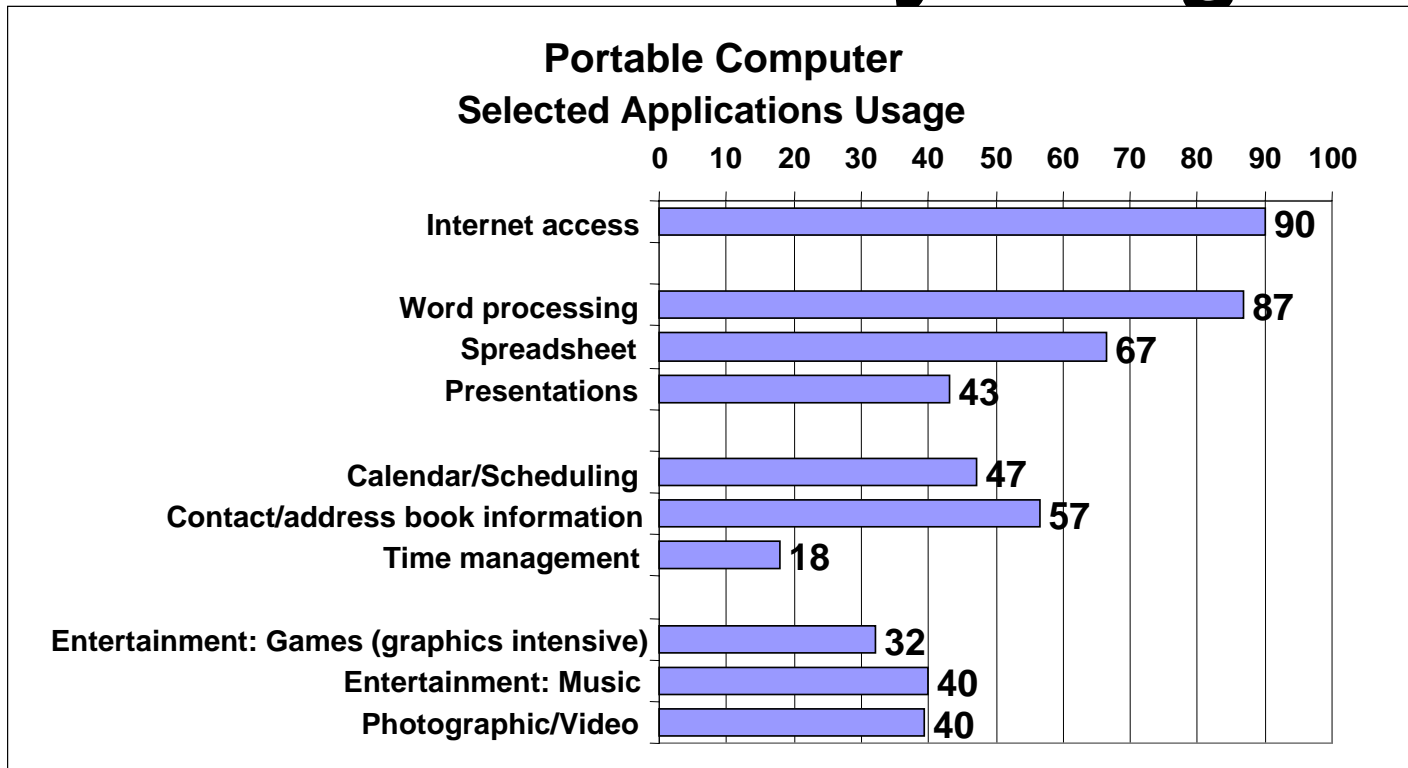


Device & Battery Usage

- 1/3 of users are connected to a wired network most of the business day
- Wireless network connection is more typically at 1 hour or less per day



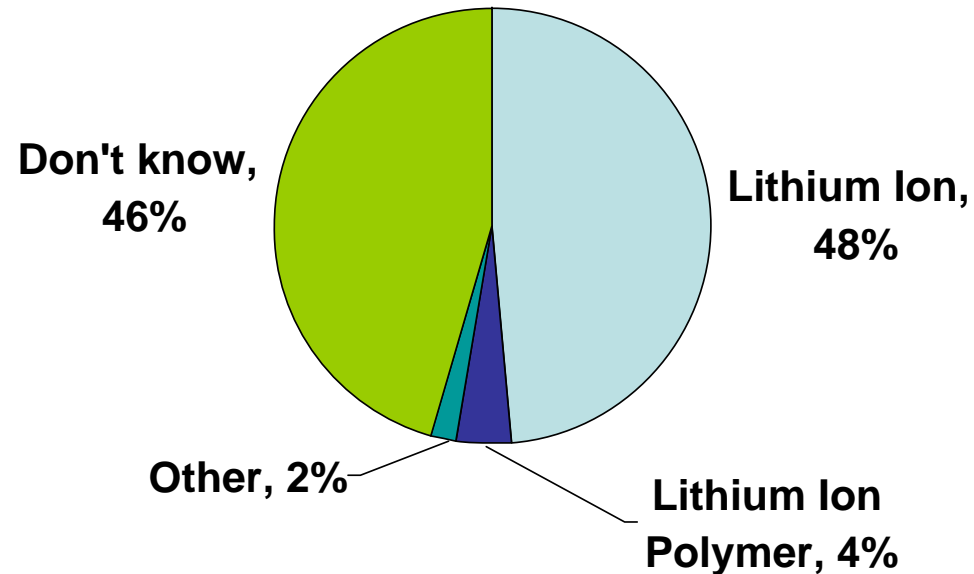
Device & Battery Usage



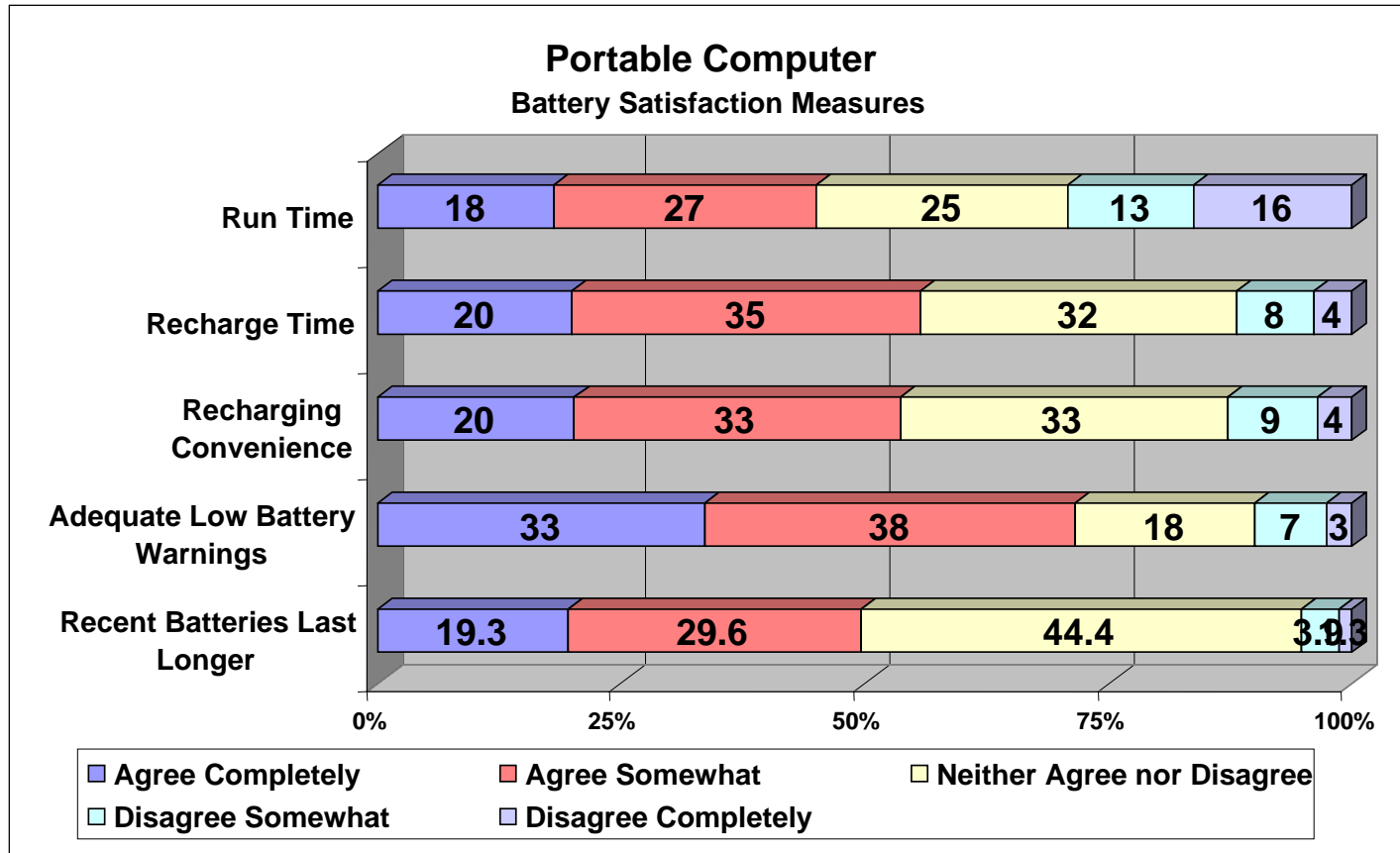
- Internet Access is the most pervasive application
- Classic business productivity tools like word processing, spread sheet and presentations form the next cluster
- Calendar, scheduling and address book are used by about 1/2
- Other entertainment oriented applications are lower

Battery Ownership

- **21% own extra batteries**
 - **37% for those on the road more than 20% of the time**
 - **27% of those with a device over a year old have extra batteries vs. only 8% for those with newer devices**
- **46% do not know what type of battery they own**
 - **Lithium Ion is the greatest for those that know the type**
 - **Battery performance is a concern, battery technology is not**

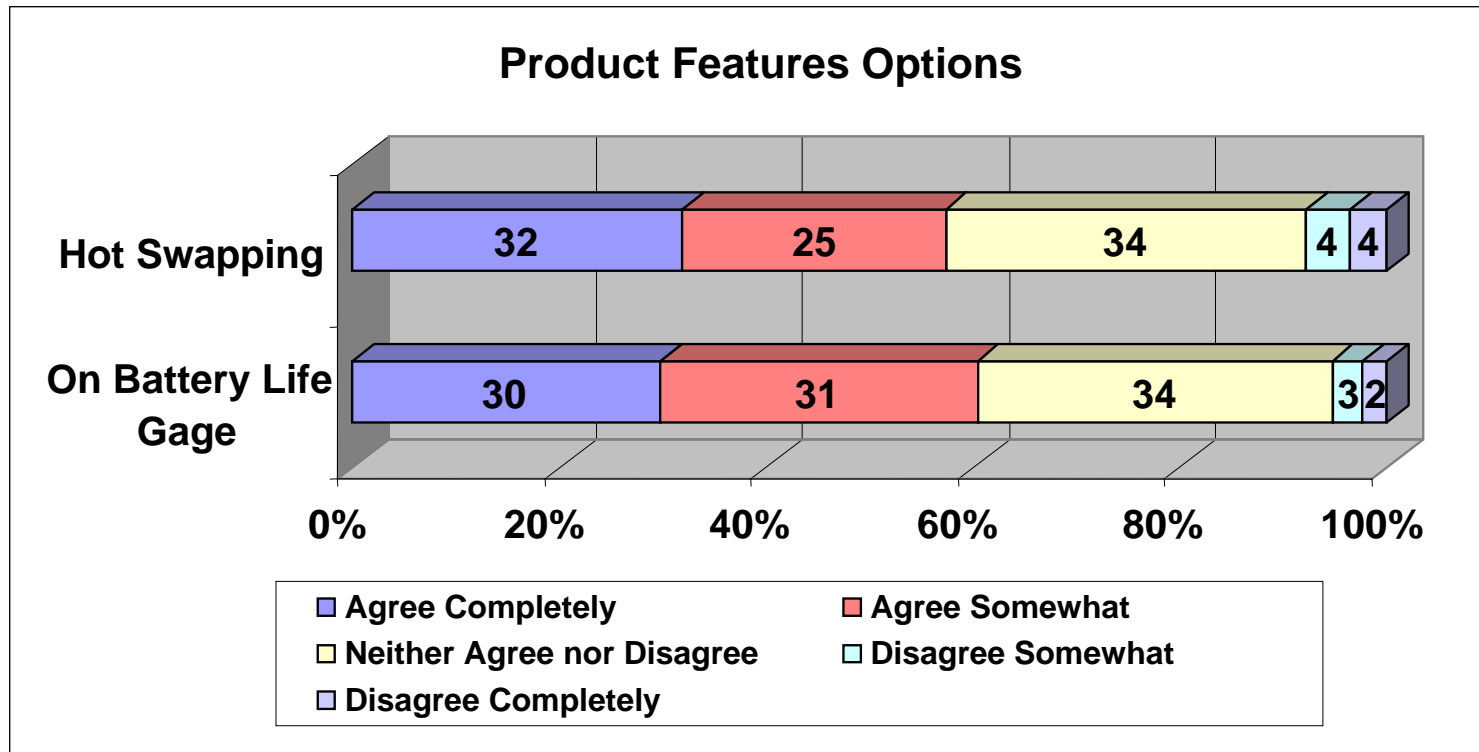


Satisfaction



- Run Time Continues To Be A Challenge
- Satisfaction
 - Recharge Time
 - Recharging Convenience
 - Low Battery Warnings
- Users do perceive that batteries in newer devices are lasting longer

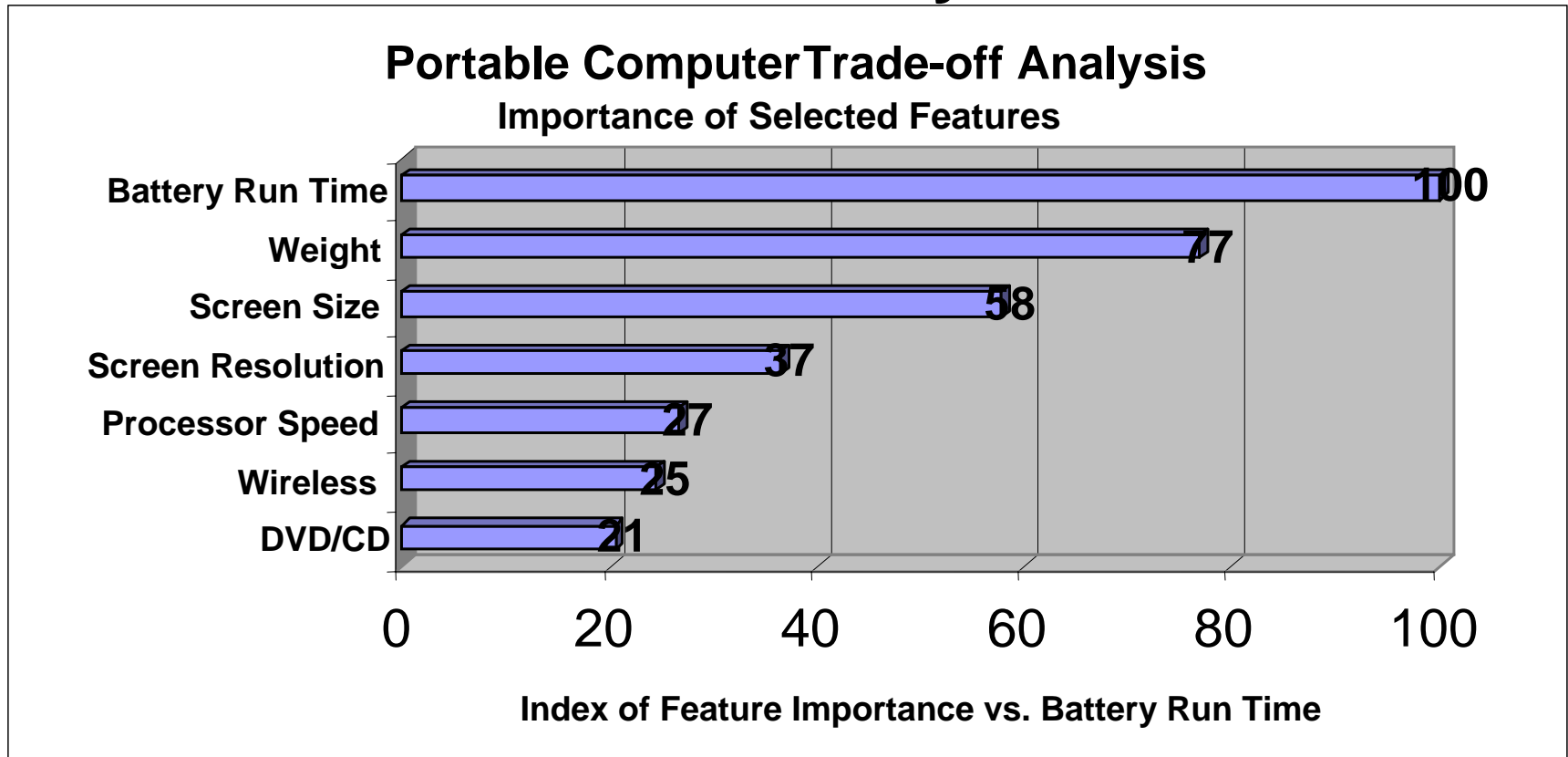
Product Features



- **Positive response to both ideas presented**
 - Hot Swapping
 - On Battery Life Gage

The Balance of Power

Trade-off Analysis



- **Battery Run Time Is The Most Important of The Features Evaluated**
 - Weight is next, indexing at 77
 - Screen size indexes at 58
 - Others much less important

Conclusion

- **Battery run time improvements to boost consumer satisfaction continue to be a challenge for device designers and battery developers**
- **Recharging convenience is not an issue**
- **Wireless connection usage is still in its early stages**
- **Weight and screen size are the most important power related features to balance with the need for improved battery run time**
- **Focus on communicating performance in consumer language, not technology as portable computers increase in penetration to mass audiences**
 - **This will also help in improving the ownership for women**

Personal Organizers

Overview

- **Battery run time performance is more important than other power related factors**
 - **Battery back-up is important**
- **Consumer are satisfied with their rechargeable batteries**
- **Consumers with alkaline powered organizers are not as satisfied with their batteries as those with rechargeables**

Overview

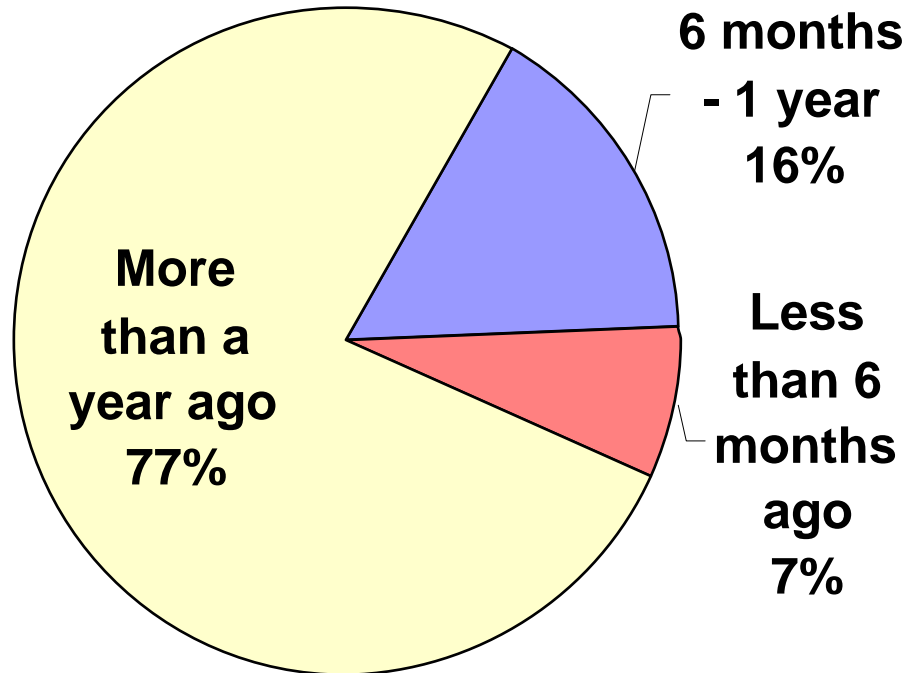
- **Median run times**
 - Rechargeable = 5 - 6 days
 - Alkaline = 3 - 4 weeks
- **Median battery recharge times at 1- 2 hours**
- **Organizer usage is almost daily**
- **Battery powered except during recharging and synchronization**
- **38% of organizers are still alkaline**

Overview

- **24% of organizers were wireless**
 - **35% for those purchased in the last year**
- **23% purchased in the last year**
- **Users tend to be very high income, well educated and older**
- **Average cost at \$246**
 - **Women spend less on the organizers they buy**
 - **Older consumers also spend less**
- **This is a carry everywhere device**

Device & User Profile

Age of Organizer



■ Device Age

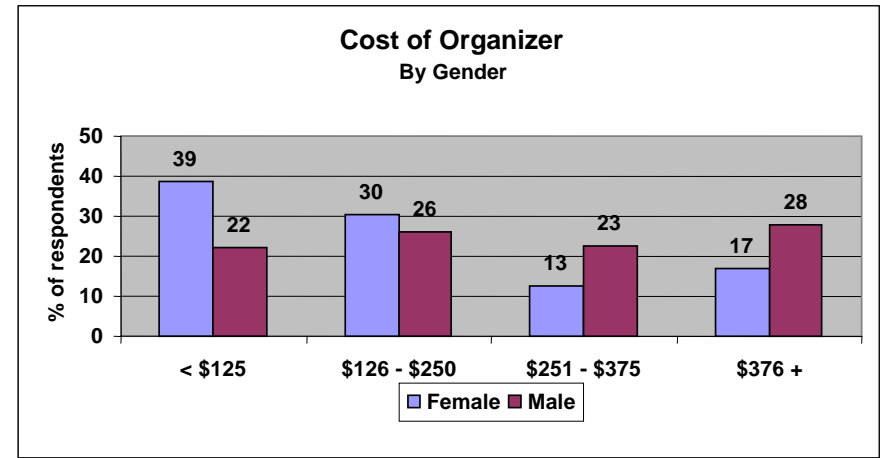
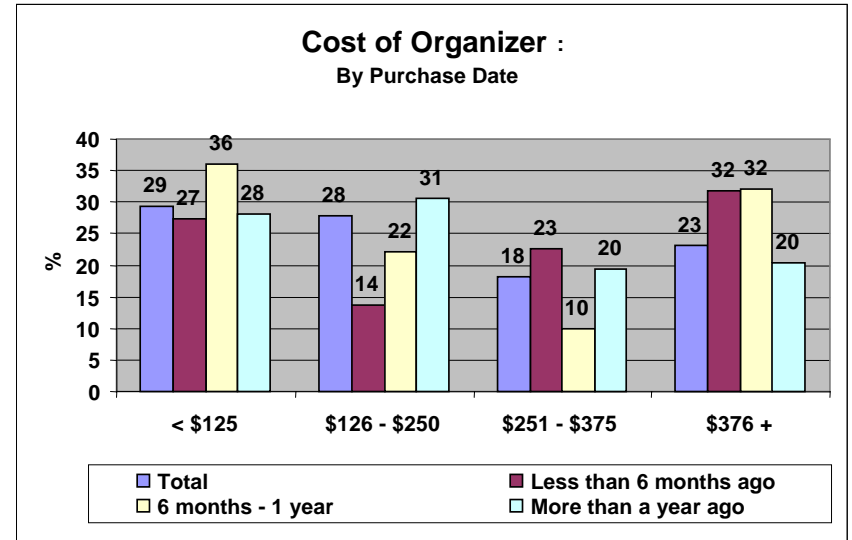
- 23% were purchased within the last year
 - 16% within the last 6 months
 - Estimated replacement cycle = 3 to 4½ years

Device & User Profile

- **Average cost = \$246**
 - **Increase in recent purchases at the highest price points**

- **Women tend to buy less expensive organizers**

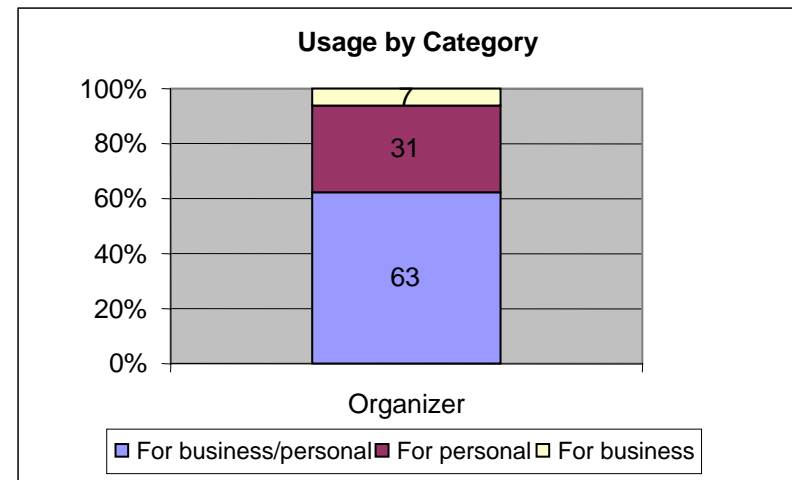
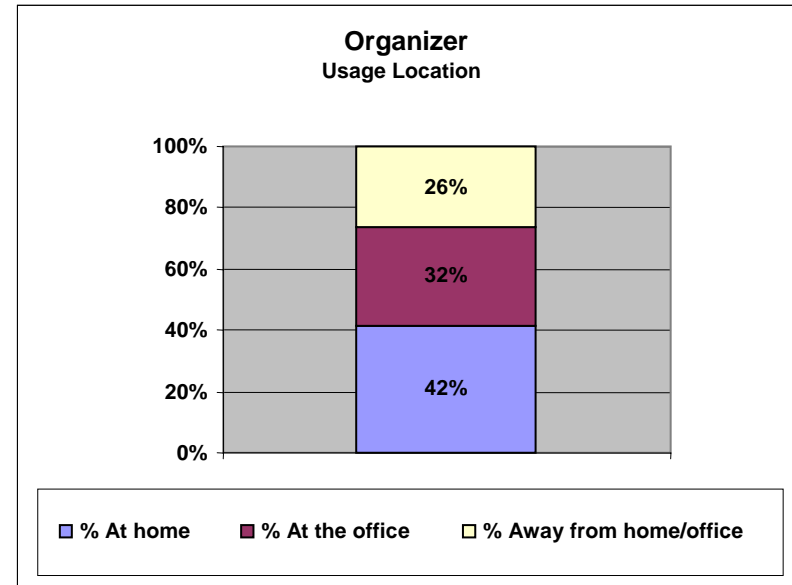
- **Older consumers also buy less expensive organizers**



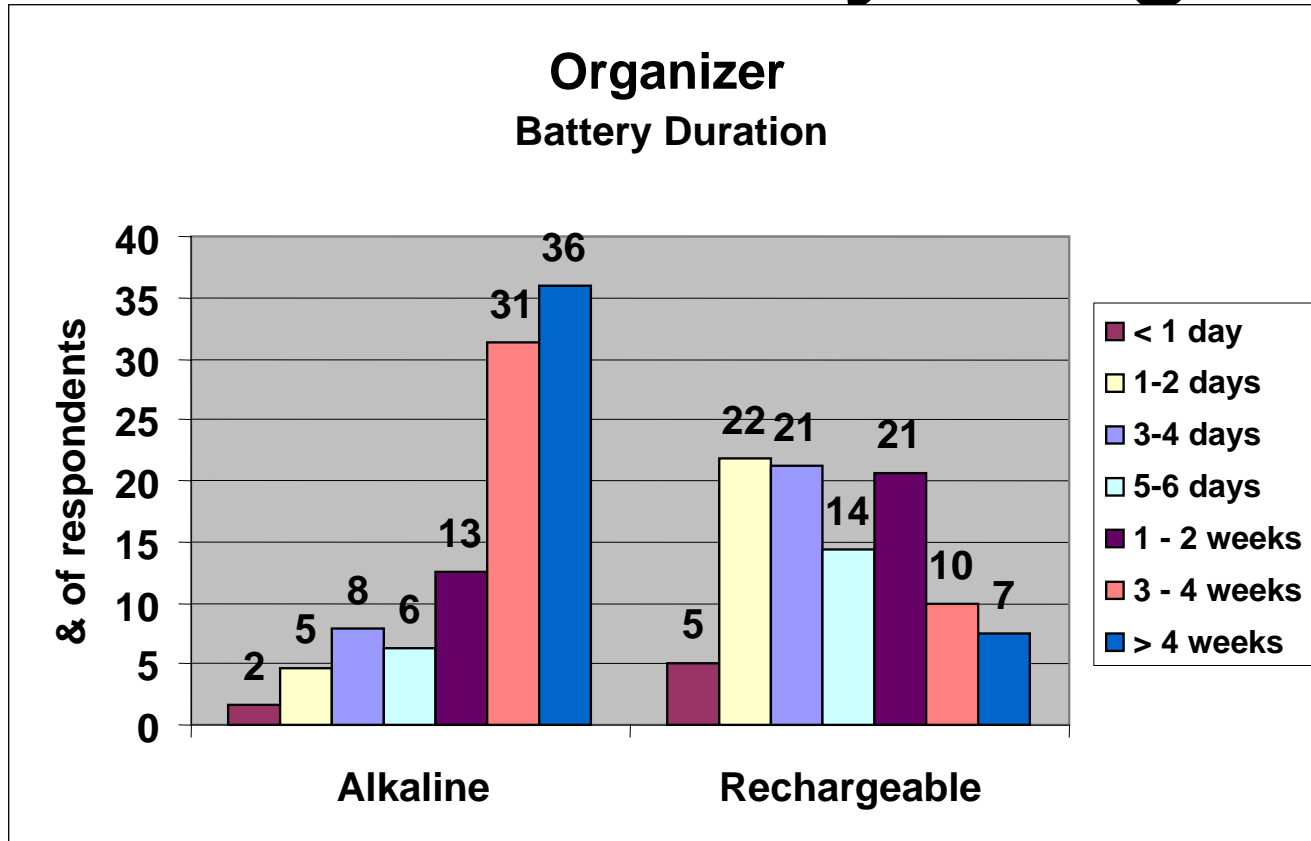
Usage Profile

- **1/4 of organizer usage is away from home or office**
 - This is a carry everywhere device, just like a cell phone

- **63% say it is for both business and personal use**

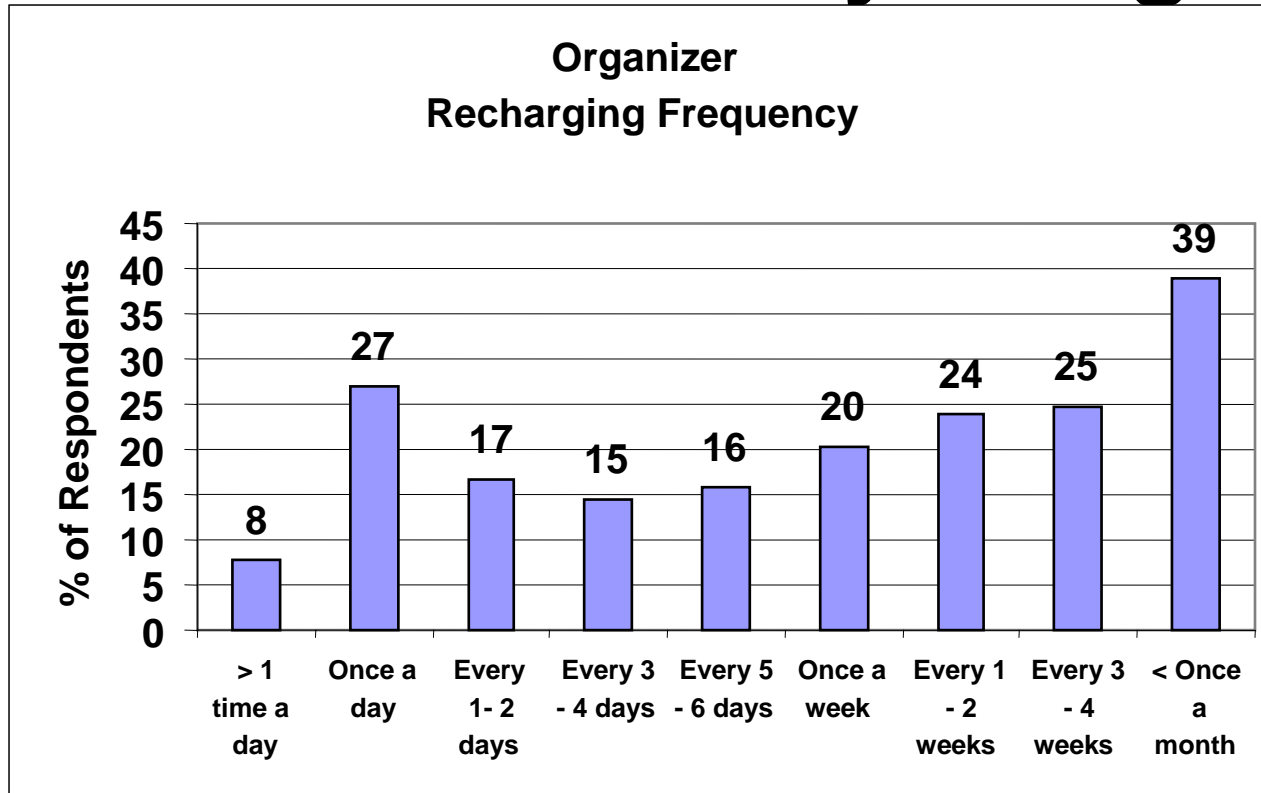


Device & Battery Usage



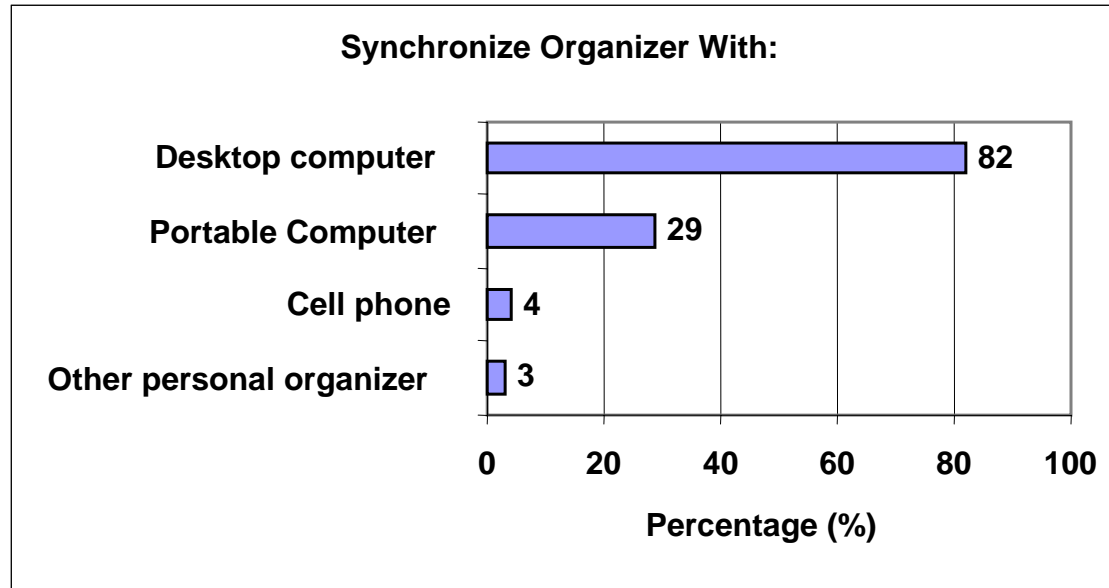
- **Battery run time medians**
 - Rechargeable = 5 - 6 days
 - Alkaline = 3 - 4 weeks
- **Recharge time median = 1- 2 hours**

Device & Battery Usage



- 1/3 recharge on at least a daily basis
- But, over 1/3 get by recharging less than once a week

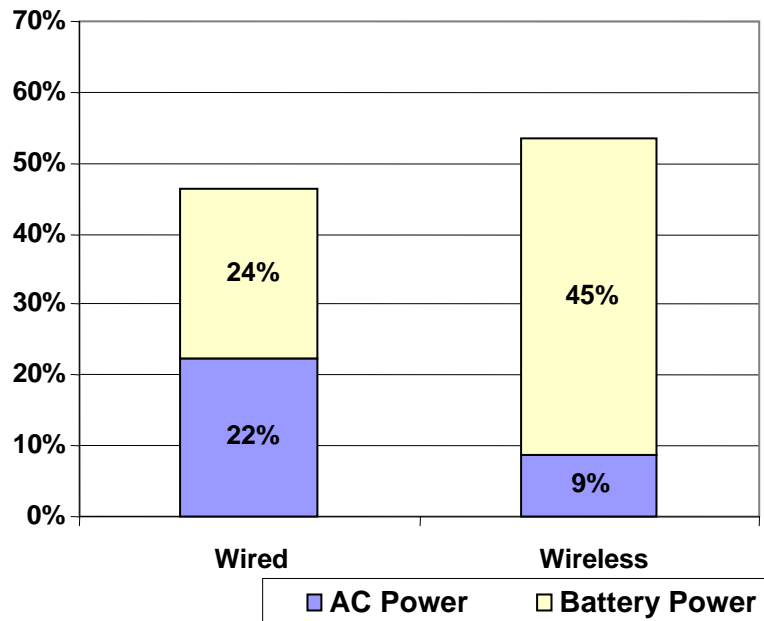
Device & Battery Usage



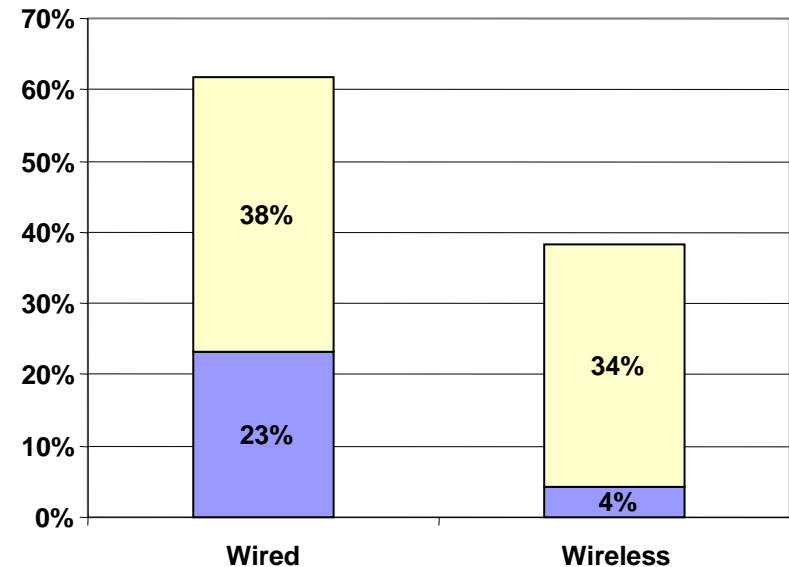
- **82% synchronize regularly with a desk top computer**
 - 29% synchronize with a portable computer
- **Synchronization modes are still 90% wired**
 - Wireless synchronization goes to 20% for those with wireless organizers
 - The dominant wireless synchronization technology is still infrared, with blue tooth and WiFi still at low levels
 - WiFi usage is higher among our small sample of pen tablet PDA owners

Device & Battery Usage

Wireless Organizers
(24% of Total)



All Organizers

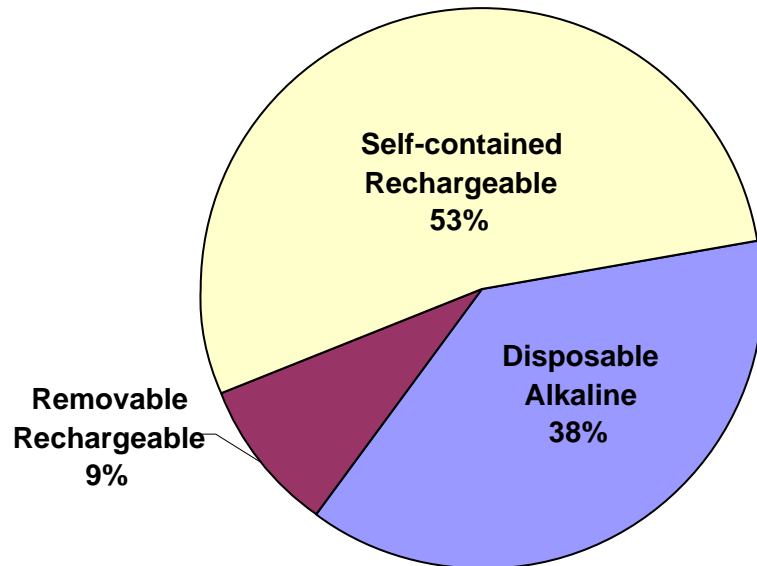


- **24% of the organizers were wireless**
 - Among these, network communication was 54% wireless
- **Organizer usage is dominated by battery power, and increasing for wireless organizer owners**

Battery Ownership

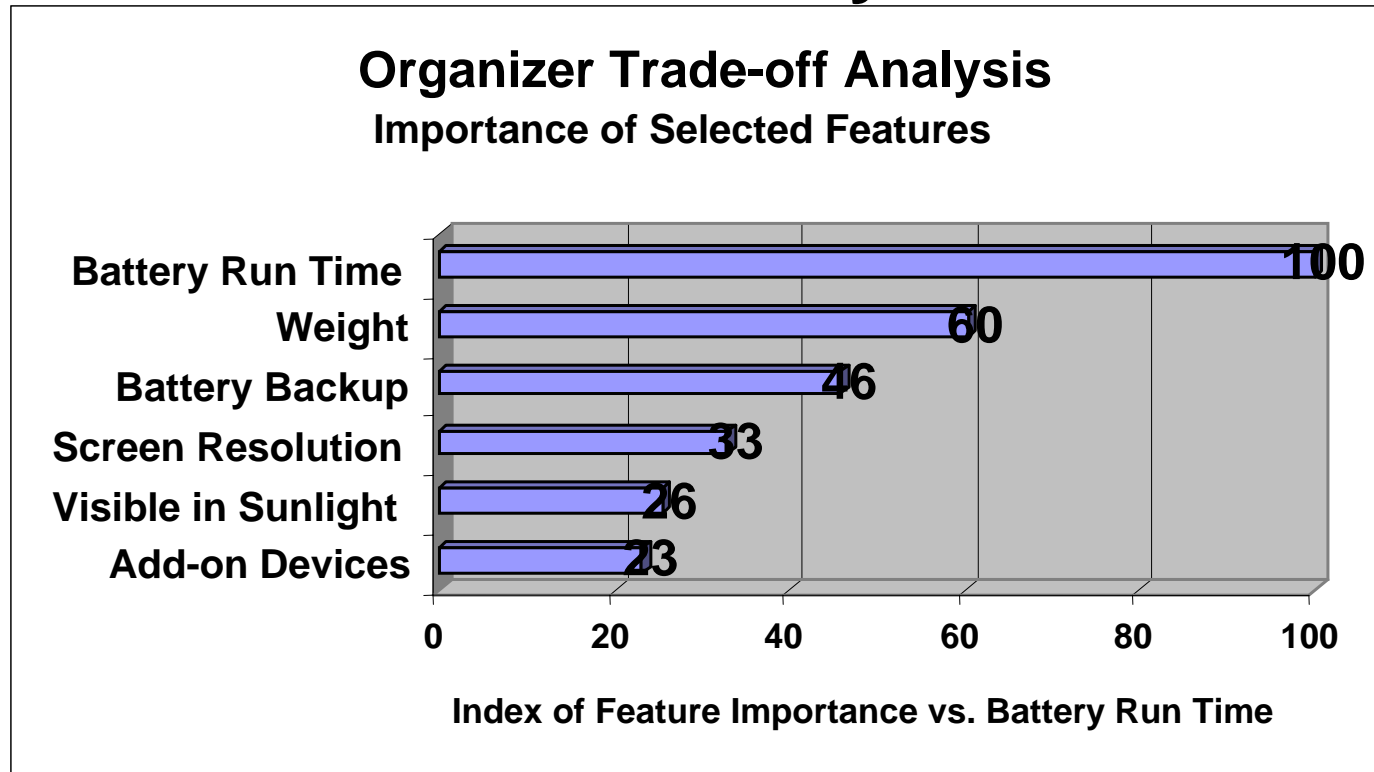
- **38% of these organizers are still disposable alkaline**
 - Of the rechargeable organizers, 15% are using removable rechargeable batteries
 - By type of rechargeable battery, of those who know, 53% cite Lithium Ion or Lithium Ion Polymer
 - 47% cite “other” rechargeable

Types of Batteries



The Balance of Power

Trade-off Analysis

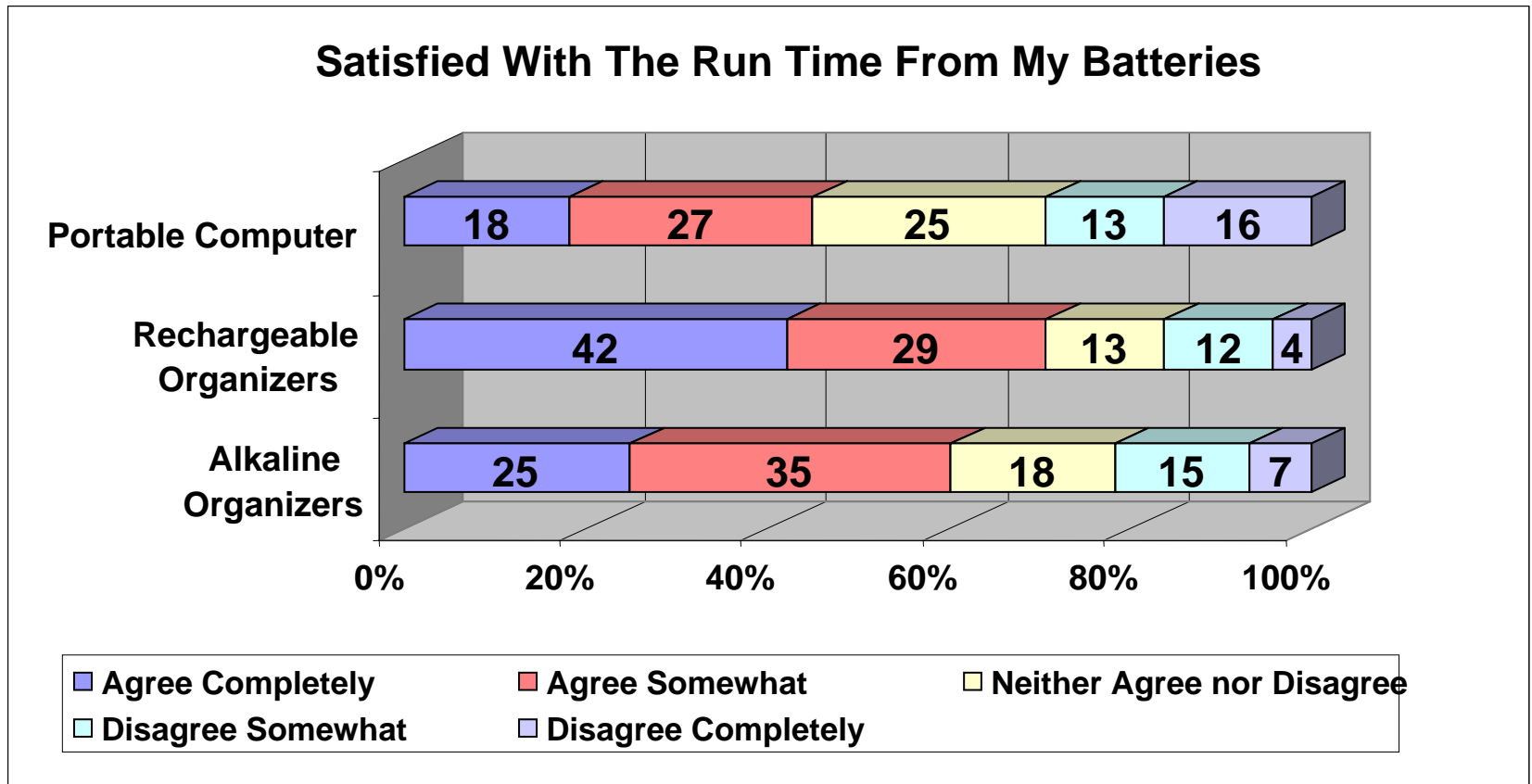


- **Battery Run Time Is The Most Important of The Features Evaluated**
 - Weight is much further down, indexing at only 60
 - Battery backup follows at 46
 - Others much less important

Some Comparisons

Portable Computers vs. Organizers

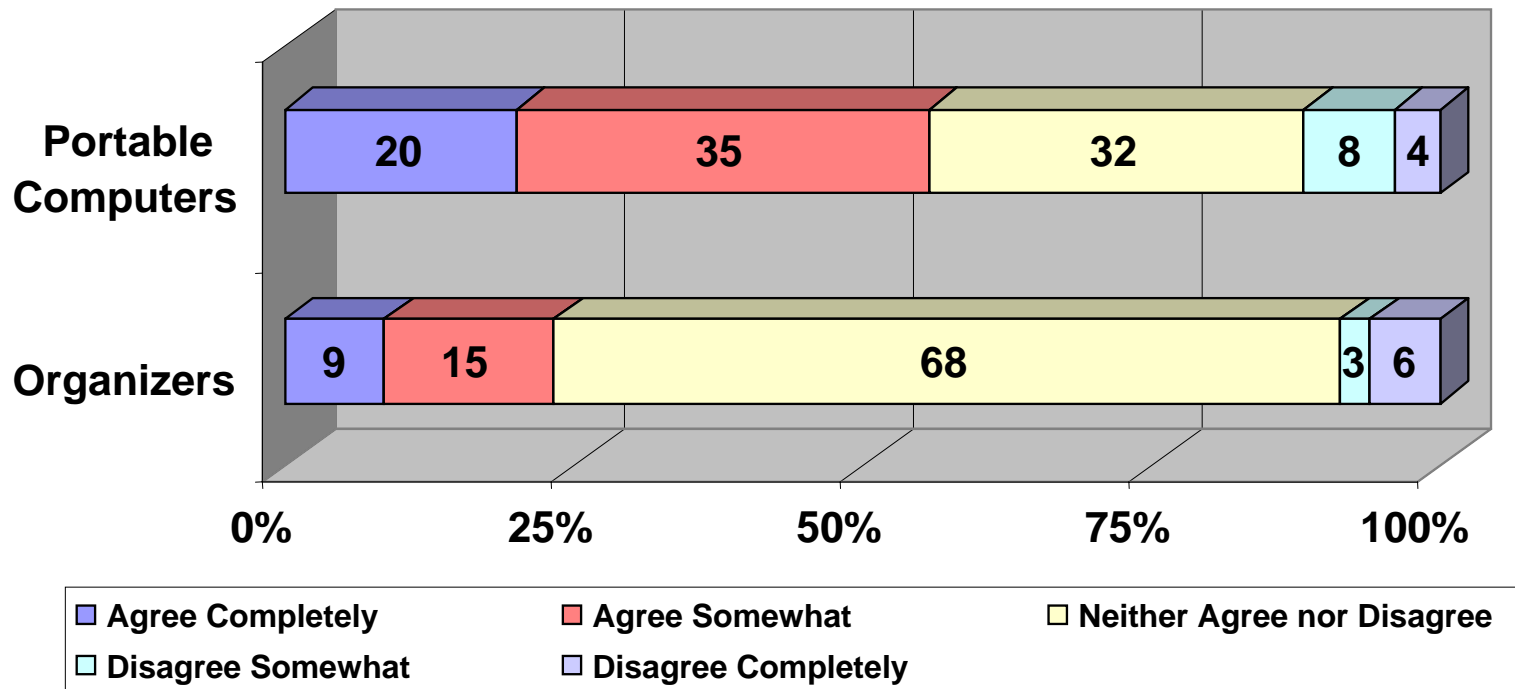
Run Time Satisfaction



- **Portable computer battery run time satisfaction will continue to be a major challenge vs. other devices**

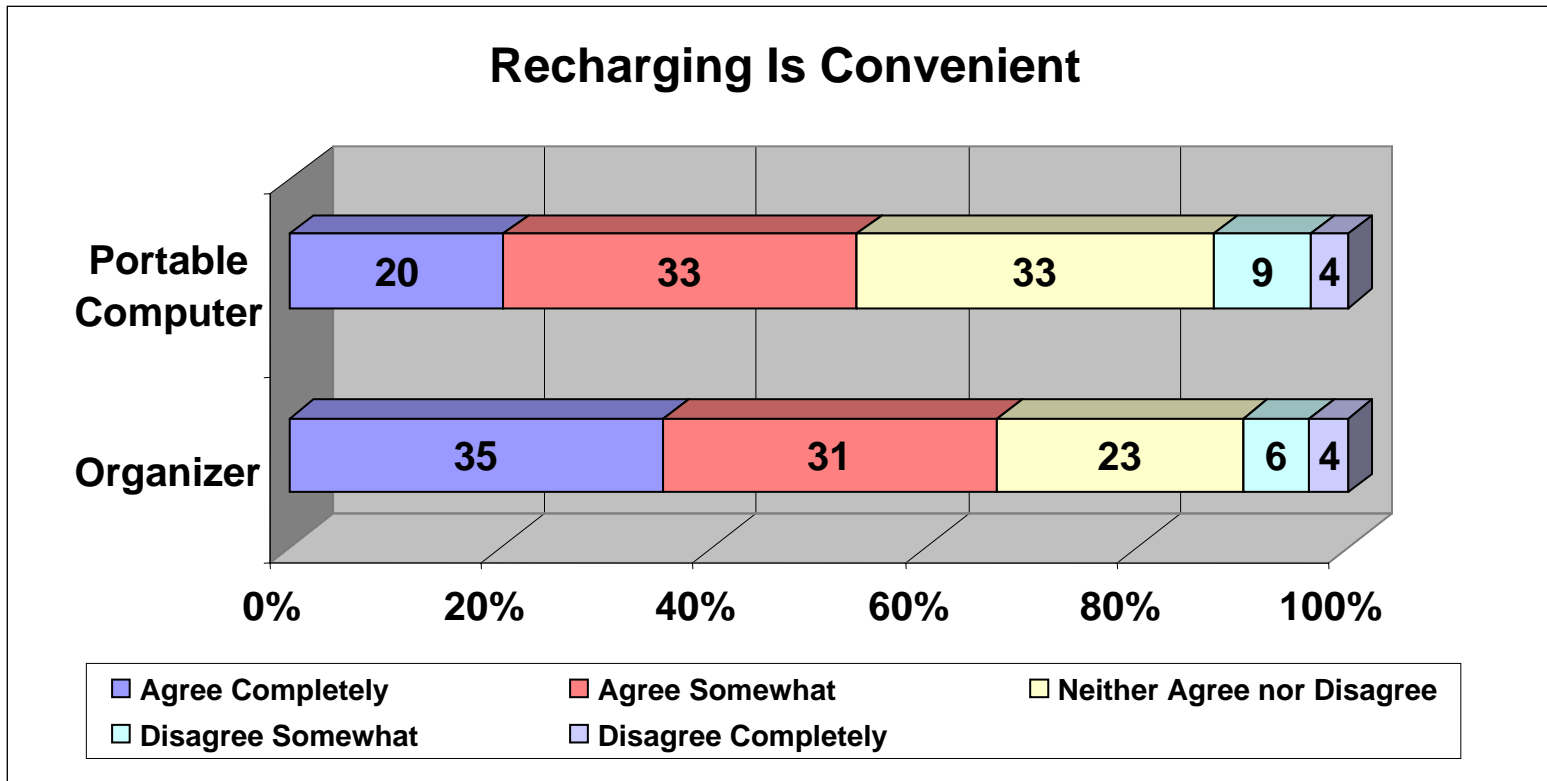
Recharge Time Satisfaction

Satisfied With The Time It Takes To Recharge



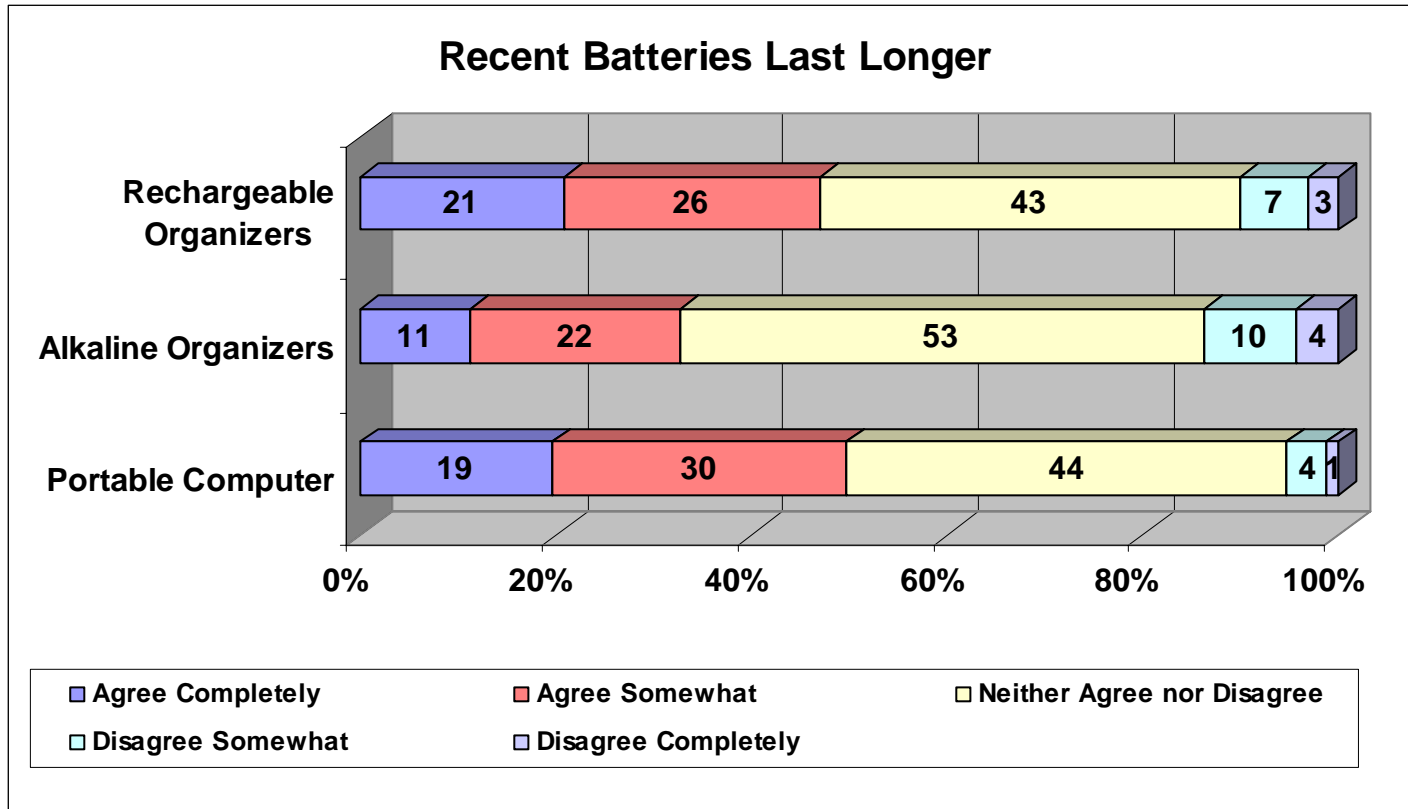
- Recharge Time is not a hot issue for either of these devices

Recharging Convenience



- Recharging convenience is also not problem issue for either of these devices
- Portable computer recharging convenience has no negatives, but satisfaction is not as good as for organizers

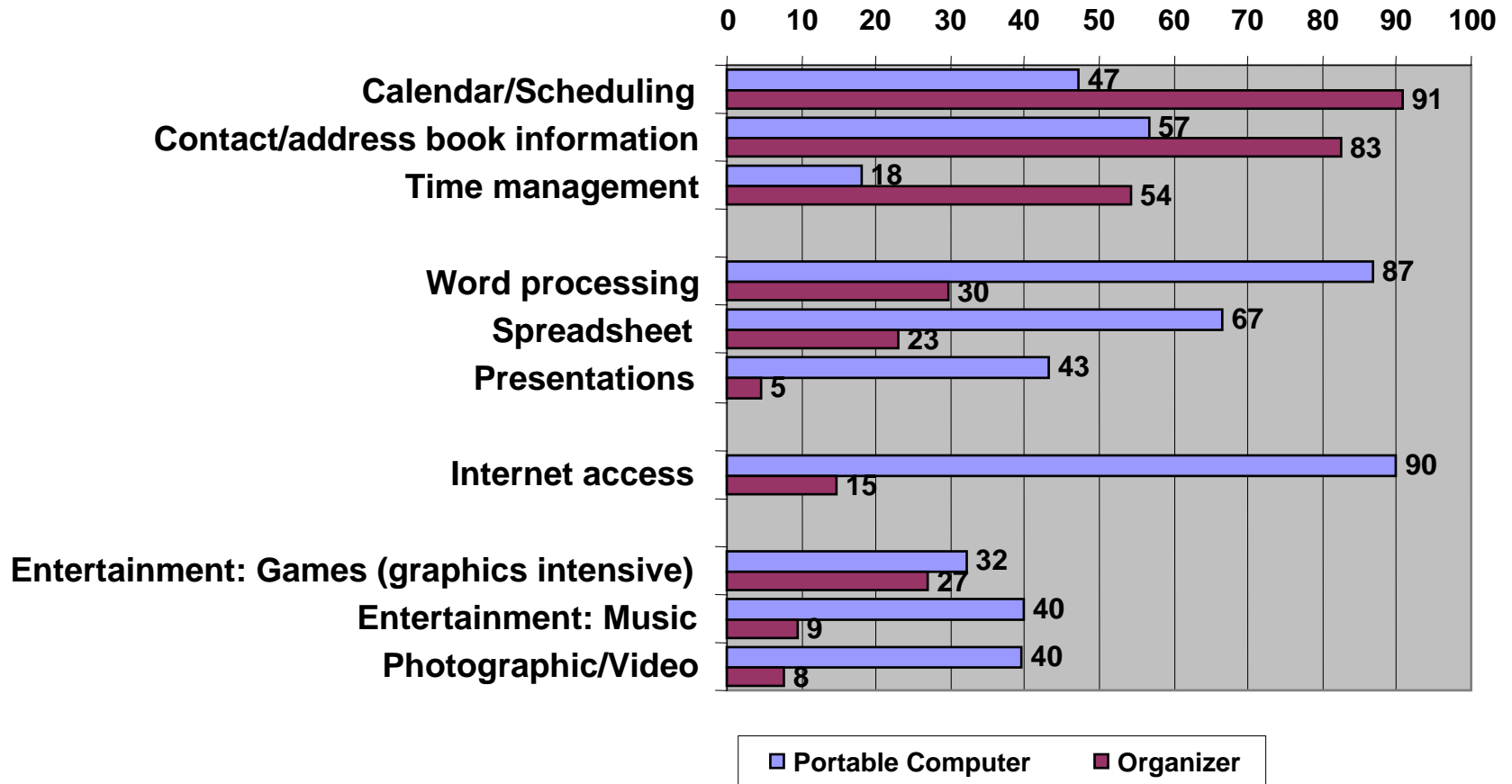
Recent Batteries Last Longer



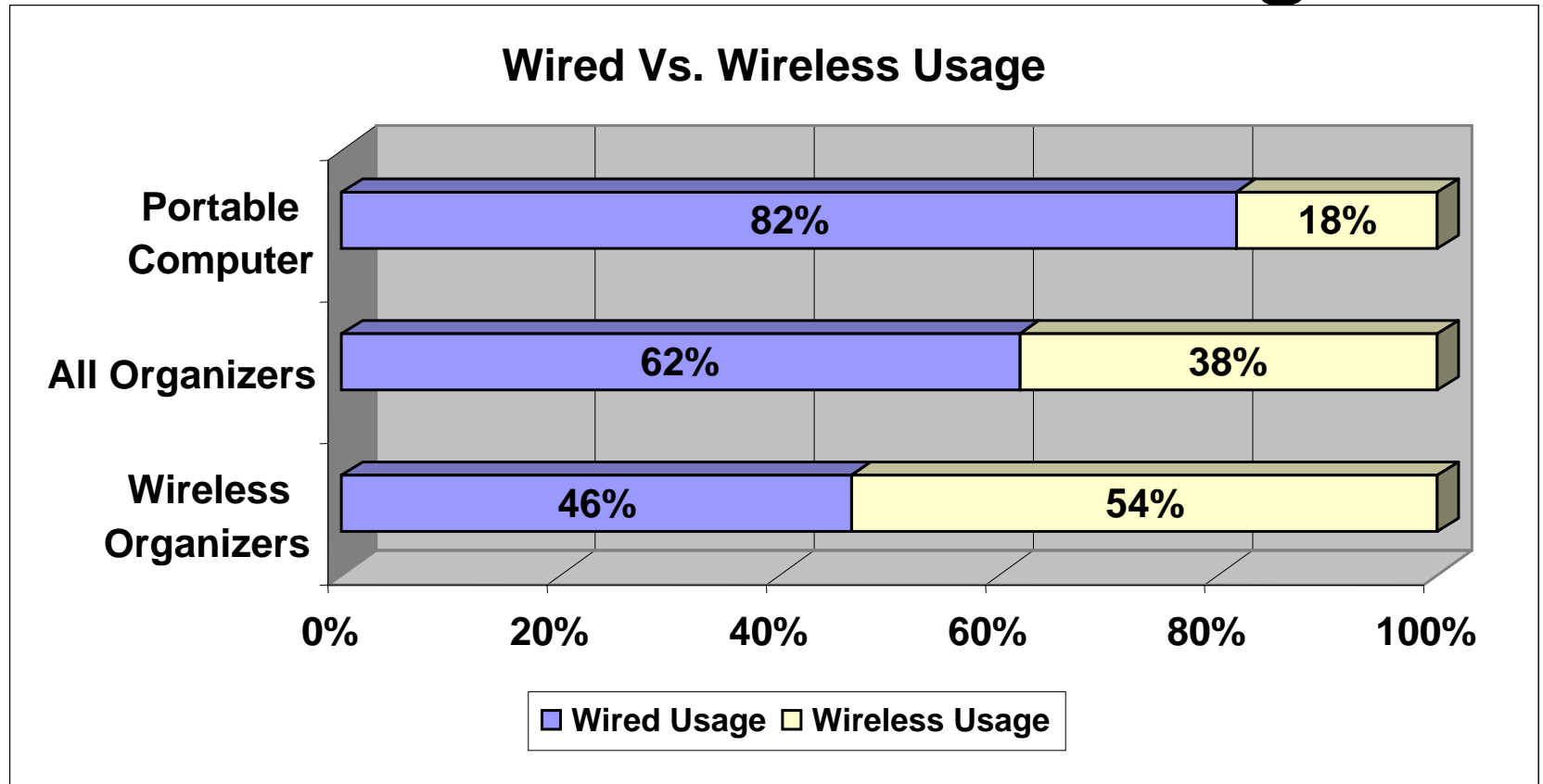
- Consumers do perceive that rechargeable batteries are lasting longer

Applications Usage

Selected Applications Usage



Wired vs. Wireless Usage



- Organizer usage is moving wireless, reflecting its carry everywhere utility vs. portable computers

Conclusion - Organizers

- **Battery run time performance improvements continue as a valuable selling feature**
 - Battery run time is not a source of dissatisfaction
 - Alkaline run time must go from weeks to months to eliminate dissatisfaction
- **Recharging convenience is not an issue**
- **Weight and battery back-up are the most important power related features to balance with the need for improved battery run time**
 - But, battery run time is much more important
- **Organizers are a true consumer device**
 - Communicate in consumer language
 - This will also help in addressing the opportunity for women
 - Convergence of organizer and cell phone functions create trade-off risks

Conclusion - Comparisons

- **Battery run time performance improvement is a greater challenge for portable computer than for organizers**
- **Newer organizers are more likely to use wireless with greater power demands**
- **Internet access remains a great untapped potential for organizers**

PORTABLE
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CONFERENCE & EXPO

September 21-23, 2003

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