



AAA CENTER FOR DRIVING SAFETY & TECHNOLOGY



2017 MAZDA3 TOURING

Standard and Optional Features in the 2017 Mazda3

	Sport	Touring	Grand Touring
○ Optional			
● Standard			
Android Auto			
Apple CarPlay			
Mobile App Support	●	●	●
Text Messaging	●	●	●
Navigation		○	○
Touch Screen	●	●	●
Gesture Control			
Heads-Up Display			
Voice Commands	●	●	●
Console Control	●	●	●

STRENGTHS

- The structure of the voice command system menus is consistent with those of the touch screen, which makes the system more intuitive.
- The touch screen is completely locked out at speeds over 5 mph.

INFOTAINMENT SYSTEM* DEMAND RATING

Very High Demand



The 2017 Mazda3 Touring's Mazda Connect™ infotainment system imposed very high demand on drivers in the on-road study. Drivers were not able to efficiently use the center console to place phone calls and make audio changes, most likely due to the system's complex menu structure. Accessing the text messaging menu using voice commands or the center stack proved to be a highly demanding task.

ABOUT THE STUDY

Researchers evaluated 30 new 2017 vehicles' infotainment systems* to measure overall demand** placed on a driver when using voice command, touch screen and other interactive technologies to make a call, send a text message, tune the radio or program navigation, all while driving down the road.

WEAKNESSES

- Use of the voice command system to place calls and send text messages did not allow drivers to keep their eyes on the road and minds on the drive.
- The voice command system abruptly ended the voice interaction several times when users attempted to send text messages.
- Using the center stack to adjust audio was very highly demanding and engaged drivers for long periods of time.

* Infotainment System: Vehicle system that combines entertainment and information content

**Overall demand measured: visual (eyes-off road), cognitive (mental) and time-on-task

VEHICLE OVERVIEW: CONTROLS AND DISPLAYS



VOICE COMMANDS



STEERING WHEEL COMMANDS



INSTRUMENT CLUSTER



CENTER STACK



CENTER CONSOLE

INFOTAINMENT SYSTEM

The Mazda Connect™ In-Vehicle Infotainment System offers the following features:

CALLING AND DIALING



The Mazda Connect™ infotainment system allows users to place phone calls to contacts and dial phone numbers using the touch screen, center console rotary wheel and voice command system. Limited phone functions are available using steering wheel buttons. If a phone is not already paired, and the driver attempts to access any phone-related menu, the system will prompt the user to begin the phone pairing process and will provide step-by-step instructions. The touch screen is completely locked out at speeds over 5 mph, and drivers must then use either voice commands or the center console's rotary wheel to access phone functions.

The calling and dialing system produced very high demand among drivers in the on-road study. While the touch screen is locked out, drivers were still experiencing very high cognitive demand for long periods of time when using the center console. Dialing a number using the rotary wheel is cumbersome, requiring drivers to rotate up and down a dial pad to select each individual digit. Shortcuts, such as the phonebook alphabet ribbon that lets users skip down to different sections of the contacts list, were convenient but insufficient in reducing interaction time to a safe level.

Similarly, using voice commands to place calls was a time-consuming and cognitively (mentally) demanding process, although drivers were able to keep their eyes on the road. Placing calls to contacts or dialing numbers can become a lengthy, multi-step process if users are unfamiliar with accepted voice commands.

TEXT MESSAGING



The system allows drivers to both receive and send text messages via the center console and voice commands when a phone is connected via Bluetooth. Drivers must then use either voice commands or the center console's rotary wheel to access text messaging functions, since the touch screen is locked out. To reply to a message via voice or center console, drivers can string together up to three predefined messages from a list of 15, which are customizable while stopped. Since the touch screen is locked out while the vehicle is in motion, message content is not displayed.

Sending text messages using the system proved to be very highly demanding, especially when using the voice command system. The process of replying to messages in the user's inbox with voice commands generated a very high cognitive (mental) demand and was time-consuming, taking an average of 58 seconds♦. Confusingly, the system ends the voice interaction abruptly after ambiguous instructions to the driver to wait while the system loads messages; then the driver is forced to reactivate the system after it has finished loading. Overall, using the voice command system to send messages is a non-intuitive, lengthy, and mentally demanding process.

In contrast, drivers were able to quickly send new text messages using the center console. However, the process produced very high cognitive (mental) demand. Drivers are cautioned against using the text messaging menu while driving, as sending messages is extremely demanding and requires an excessive number of steps to complete.

♦ Compared to a recommended maximum of 24 seconds



The infotainment system provides audio entertainment access through voice commands, touch screen and the center console. Some steering wheel buttons provide additional audio control. As the touch screen is locked out, drivers must then use either voice commands or the center console's rotary wheel to access phone functions.

Overall, using the infotainment system to tune the radio and make audio selections was highly demanding for drivers in the on-road study. Accessing the center stack display using the rotary wheel and accompanying buttons imposed very high cognitive (mental) demand on drivers. Researchers[^] found several issues with the audio entertainment menu on the center stack display, which utilizes a menu structure unique to the Mazda Connect™ system. Audio tasks are complex due to unfamiliar icons and labels, which make determining the function of each button difficult. However, the menu structure complements how the rotary wheel functions.

The voice command system to tune audio also demanded very high levels of cognitive demand, though interactions were kept short. Most notably, when the voice system is activated with the audio menu loaded on the center stack display, the available voice commands listed on the screen mirror the same buttons accessible via the rotary wheel. This consistency between the touch-screen menu and voice commands may help drivers remember available commands.

[^] Researchers with expertise about how humans interact with technology evaluated the usability of the infotainment system in stationary vehicles.

VEHICLE CONTROLS AND DISPLAYS

VOICE COMMANDS



The Mazda3 infotainment system comes equipped with a voice command system giving access to phone, audio and text messaging functions, to name a few. The voice activation button is clearly labeled. The voice system has a natural-sounding female voice. Different tones and patterns of beeps as well as visual cues on the touch screen indicate whether the system is listening for commands, is processing user input, or has been canceled. A volume bar on the touch screen clearly tells users whether the system microphone is picking up their voices.

INSTRUMENT CLUSTER



The instrument cluster is located behind the steering wheel and contains a central analog speedometer with two small monochromatic digital displays on either side. Both screens contain digital gauges that substitute for standard analog gauges, such as the tachometer and fuel.

STEERING WHEEL CONTROLS



The steering wheel contains 13 buttons, of which eight on the left side control audio entertainment, limited phone functionality, access to the left cluster display screen and the voice command system. Controls on the right side are dedicated to cruise control with one button controlling the audio source.

CENTER STACK



The Mazda3's center stack features a 7-inch touch screen located high up on the dashboard and houses the Mazda Connect™ infotainment system's core functions: audio entertainment, phone, system applications, and settings. The touch aspect of the screen locks out when the vehicle travels at 5 mph or faster, and drivers must use the center console to access functions. Along the bottom of the center stack, 14 buttons and two dials are used to control climate settings. A small monochromatic screen displays current climate settings.

CENTER CONSOLE



A rotary wheel and five accompanying buttons give access to the touch screen. The dial can be rotated left and right and pushed inward, up, down, left and right to navigate through the different menus and make selections. The center console controls the center stack touch-screen display.

VEHICLE SALES SUMMARY

The 2017 Mazda3 is the 57th best-selling vehicle in the United States, with 95,567 vehicles sold during 2016¹.

¹ Source: Automotive News at autonews.com; Wall Street Journal at wsj.com – data updated to 2/25/2017.